MDP-A600K
RMT-M24A

SERVICE MANUAL

E Model
Tourist Model

SPECIFICATIONS

System

Type
CD/CDV/LD player

Signal readout
Optical (Laser beam reflection)

Signal format system
EIA standard, NTSC colour system

Playing time
See "Optical discs" on page **27**.

Digital audio specifications

Frequency response
4 Hz to 20 kHz (±1.0 dB)

Signal-to-noise ratio
More than 110 dB (EIAJ)*

Dynamic range
More than 99 dB (EIAJ)

Wow and flutter
Below measurement limit (+0.001 % W.PEAK)(EIAJ)

Video specification

Horizontal video resolution
425 lines

Signal-to-noise ratio
More than 49 dB

* Measured according to EIAJ (Electric Industries Association of Japan) standards.

Input and Output

LINE OUT 1,2
VIDEO output, Phono jack (1)
Output signal: 1 Vp-p, 75 ohms, unbalanced
AUDIO output, Phono jacks (2)
Stereo L, R
Analog: 200 mVrms
(1 kHz, 40 % modulation)
Digital: 200 mVrms
(1 kHz, –20 dB)

LINE IN
VIDEO input, Phono jack (1)
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO input, Phono jacks (2)
Stereo L, R
Input signal: 2 Vrms
Input impedance:
more than 47 kilohoms

MIC 1/2 jacks
Standard jacks
1 mV
(Impedance below 1 kilohm)

General

Power requirements
120/220/240 V AC, adjustable, 50/60 Hz

Power consumption
40 W

Operating temperature
5°C to 35°C

Ambient humidity
5% to 90 %

Dimensions
Approx. 430 × 117 × 429 mm (w/h/d)
including projecting parts and controls

Mass
Approx. 10.3 kg

Supplied accessories

Remote Commander RMT-M24A (1)
R6 (size AA) batteries (2)
Audio/Video Cable
(phono plug 3⟷phono plug 3)(1)
AC plug adaptor (1)

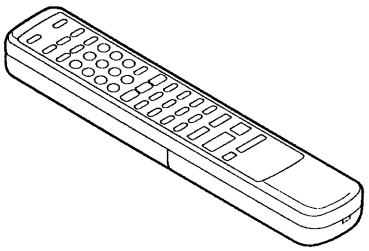
Design and specifications are subject to change without notice.

CD/CDV/LD PLAYER

SONY

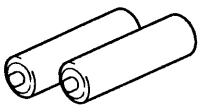
Check that you have the following items:

- **Remote commander**

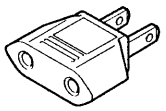


- **Audio/Video cable**

- **Two R6 (size AA) batteries**



- **AC plug adaptor**



WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

This CD CDV LD Player is classified as a CLASS 1 LASER product.

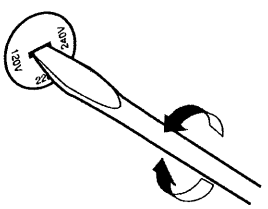
CAUTION

The use of optical instruments with the product will increase eye hazard.

As the laser beam used in this player is harmful to the eyes, do not attempt to disassemble the cabinet. Refer servicing to qualified personnel only.

Operating voltage

- Before operating the player, make sure that the operating voltage of your unit is identical with that of your local power supply. If necessary, reset the selector at the rear of the player to the voltage corresponding to your local power supply (120, 220 or 240 volts AC). The voltage selector of this unit is set to 220 V AC originally. When using in Malaysia, reset the selector to 240 V AC.
- To reset the voltage selector, disconnect the mains lead and turn the selector with a blade screwdriver so that the arrow on the rear panel points to the appropriate voltage.



SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and brides.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, throught functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replace-ment.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270℃ during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

TABLE OF CONTENTS

1. GENERAL

2. DISASSEMBLY ·····1-1
2-1. UPPER CASE, FRONT PANEL ASSEMBLY ·····2-1
2-2. MB-712 BOARD ·····2-2
2-3. CHUCKING ASSEMBLY ·····2-2
2-4. OPTICAL PICK-UP BLOCK ·····2-3
2-5. MD CHASSIS ASSEMBLY·····2-5
2-6. CONTROL GEAR ·····2-7
2-7. TRAY ASSEMBLY ·····2-8
2-8. PUTTING OUT DISC WHEN A TROUBLE HAS OCURRED WITH THE DISC LOADED ·····2-9
2-9. TURNTABLE ASSEMBLY HEIGHT ADJUSTMENT·····2-9
2-10. INTERNAL VIEWS·····2-10
2-11. CIRCUIT BOARDS LOCATION ·····2-11

3. DIAGRAMS
3-1. OVERALL BLOCK DIAGRAM ·····3-1
3-2. VIDEO BLOCK DIAGRAM ·····3-4
3-3. SERVO BLOCK DIAGRAM ·····3-7
3-4. SYSTEM CONTROL BLOCK DIAGRAM·····3-9
3-5. MODE CONTROL BLOCK DIAGRAM·····3-11
3-6. AUDIO BLOCK DIAGRAM ·····3-13
3-7. LINE IN BLOCK DIAGRAM ·····3-15
3-8. POWER SUPPLY BLOCK DIAGRAM ·····3-17

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS
4-1. FRAME SCHEMATIC DIAGRAM·····4-1
4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS ·····4-5
·MB-712 board·····4-6
·MT-712, SW-719 boards·····4-15
·FP-734, PW-710, SW-728 boards ·····4-27
·BI-702, FG-704, MD-703, MT-703 boards ·····4-31
·KP-707, MA-708, JA-707 Boards ·····4-35
·PS-716, TR-718, VS-707 boards·····4-40

5. REPAIR PARTS LIST
5-1. EXPLODED VIEWS
5-1-1. UPPER CASE, FRONT PANEL ASSEMBLY ···5-1
5-1-2. CHUCK FRAME ASSEMBLY ·····5-2
5-1-3. SUB FRONT PANEL ASSEMBLY ·····5-3
5-1-4. CHASSIS ASSEMBLY ·····5-4
5-1-5. MD CHASSIS ASSEMBLY ·····5-5
5-2. ELECTRICAL PARTS LIST ·····5-6

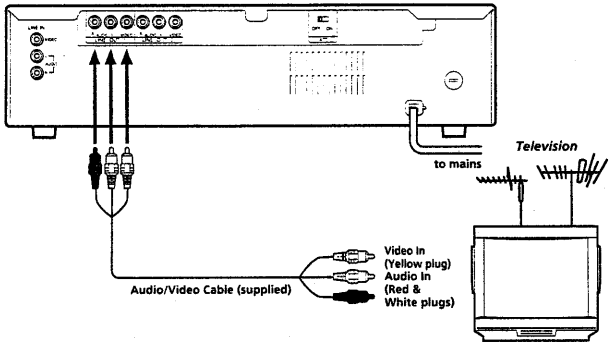
6. INTERFACE·IC PIN FUNCTION
6-1. SYSTEM CONTROL MICROPROCESSOR PIN FUNCTION (MB-712 BOARD IC501 MB89094PF-G-117) ·····6-1
6-2. EXPANSION OUTPUT PORT IC PIN FUNCTION (MB-712 BOARD IC502 MB606F06)·····6-2
6-3. MODE CONTROL MICROPROCESSOR PIN FUNCTION (FP-735 BOARD IC301 MB89094PG-G-119)·····6-3

7. ELECTRICAL ADJUSTMENTS
7-1. LIST OF SERVICING JIGS·····7-1
7-2. CAUTIONS ON ADJUSTMENT·····7-1
7-3. DEBUGGING MODE ·····7-1
1. How to enter the debugging mode ·····7-1
2. How to exit the debugging mode ·····7-1
3. Switching the screen display·····7-2
4. Explanation of the debugging display ·····7-2
4-1. [FRAME/TIME] Version number of the microprocessor ·····7-2
4-2. [1] History of the function modes·····7-2
4-3. [2] History of the emergency occurrence ·····7-3
4-4. [3] Information for repair service, sent from the mechanism controller ·····7-4
4-5. [4] Trap-flag ·····7-7
4-6. [5] Key/remote control data ·····7-7
4-7. [7] Information on communication with the mechanism·····7-8
7-4. SERVICE MODE ·····7-9
1. How to enter the service mode ·····7-9
2. How to exit the service mode ·····7-9
3. How to use the special key functions ·····7-9
3-1. PLAY key ····· Focusing search ·····7-9
3-2. SIDE A key ····· Sledding in reverse direction ·····7-9
3-3. SIDE B key ····· Sledding in normal direction ·····7-10
3-4. PAUSE key ····· Tilt servo ON ·····7-10
7-5. OPERATING THE MDP-A600K WITH HIDDEN KEY FUNCTION·····7-10
1. How to use the "simultaneous main-unit-key-press functions" ·····7-10
2. How to use the "simultaneous main-and-remote-control-units-key-press functions" ·····7-12
7-6. 7-SEGMENT-DISPLAY-DURING-STANDBY FUNCTION ·····7-13
1. How to use the "7-segment-display-during-standby"·····7-13
7-7. ADJUSTMENT AFTER THE ATTACHMENT OF THE OPTICAL PICK-UP BLOCK ·····7-13
7-7-1. JIGS AND TOOLS·····7-13
7-7-2. CD ADJUSTMENT ·····7-14
7-8. POWER SUPPLY CHECK (PS-716 BOARD) ·····7-16
7-9. SYSTEM CONTROL SYSTEM ADJUSTMENT·····7-16
7-9-1. Master Clock Adjustment (MB-712 Board) ·····7-16
7-10. LD SIDE A TILT BALANCE ADJUSTMENT ·····7-17
7-11. LD SIDE B TILT BALANCE ·····7-18
7-12. VIDEO SYSTEM ADJUSTMENT ·····7-19
7-12-1. Burst Gate Position Adjustment (MB-712 Board) ·····7-19
7-12-2. REF H Adjustment (MB-712 Board) ·····7-19
7-12-3. Color DOC Adjustment (MB-712 Board) ·····7-19
7-12-4. Video Output Level Adjustment (MB-712 Board) ·····7-20
7-13. PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENT·····7-21

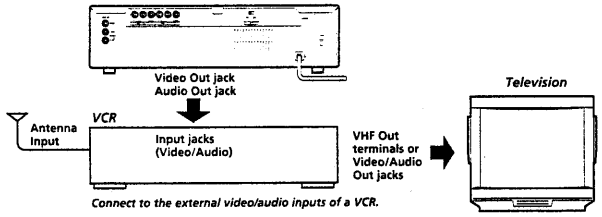
Step 3 Connecting the player

Television hook-up

To play LDs or CDVs, hook up a television to the LD Player. Take out the supplied audio/video connecting cable (yellow, red and white plugs). Use this to connect the player to the television. Once you have hooked-up the television, set the input selector on the TV to "Video." Before connecting or disconnecting any of the cables, turn off all equipment.



Television/VCR hook-up

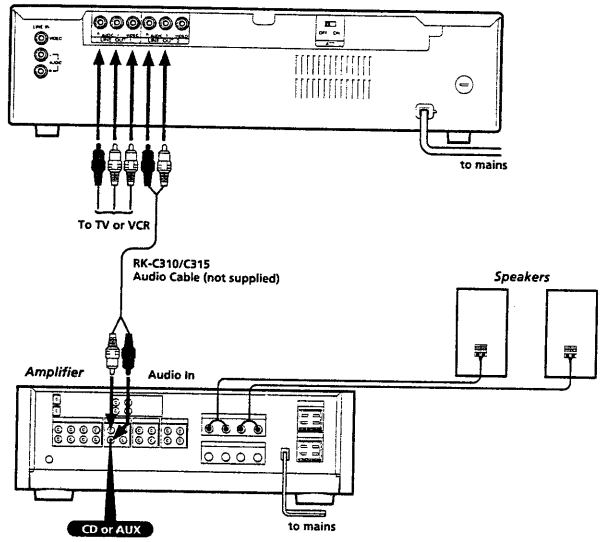


Notes

- Make sure all equipment is turned off before connecting or disconnecting any cables.
- Connection methods may differ; when in doubt about a connection, consult the TV or VCR manufacturer's manual.
- If the sound or picture is disturbed by noise, try moving the equipment farther apart.
- Firmly insert plugs into the jacks. A loose connection may cause noise.
- To prevent later interference with TV broadcast reception, turn off all equipment connected but not currently in use.
- If the TV only has a monaural phono jack for audio input, use a VMC-910/915 Connecting Cable (not supplied).

Audio equipment hook-up

To achieve full stereo sound from your LD Player, hook up a stereo system following the diagram below. Use an RK-C310 (or RK-C315) audio connecting cable (not supplied) to connect the LD Player to your amplifier or receiver. Before connecting or disconnecting any of the below cables, turn off all equipment.



Notes

- Make sure all equipment is turned off before making any of the above connections.
- Firmly insert plugs into the jacks. A loose connection may cause noise.
- When listening to a radio broadcast, switch off the LD Player to get better reception.

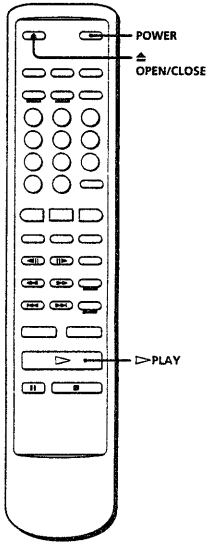
SECTION 1
GENERAL

MDP-A600K

This section is extracted from instruction manual.

Basic Operations

Playing a disc



Notes

- If you place more than one disc, or if the disc is not seated properly, the disc may not start playing. It may cause damage to the disc or the player.
- Do not transport the player while playing a disc as it may cause damage to your disc or the player.
- Do not use a CD stabilizer when playing a CD as it may cause damage to your disc or the player.
- When you press ❚❚ PAUSE, the picture goes blank when playing a CLV LD or CDV, and the picture freezes when playing a CAV LD (see "Viewing frame-by-frame action" on page **23**).

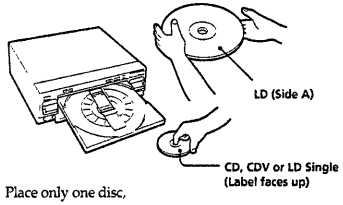
This section shows you how to play an LD, CD or CDV.

Loading and playing a disc

1 **Press POWER to switch on the player.**
You can also directly switch on the player by pressing ⏏ OPEN/CLOSE or ▷ (Play) on the player.

2 **Press ⏏ OPEN/CLOSE to open the disc tray.**
The front cover of the player automatically slides down and the disc tray comes out.

3 **Place a disc on the disc tray.**



Place only one disc, carefully fitting it in the circle on the tray.

4 **Press ▷ PLAY.**
The disc tray closes and the upper side of the disc starts playing. You can also start playing by pressing the disc tray to close it manually.
When playback of the upper side of an LD (side A) ends, the other side (side B) starts playing automatically.

Additional features

To	Press
Stop play	■ STOP
Pause play	❚❚ PAUSE
Resume play after pause	❚❚ PAUSE or ▷ PLAY
Scan forward or backward	◀◀/▶▶ SCAN
Skip chapters or tracks	⏮/⏭ ACS/AMS
Remove the disc	⏏ OPEN/CLOSE

Tips

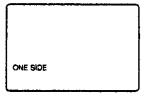
- When playing a double-sided LD, the player determines that the upper side of the disc is side "A" and the other side is "B," regardless of the label "A" or "B" printed on the disc.
- When playback of LD side B ends, the player stops.
- When playing a CD or CDV, the player stops if you press DISC SIDE B.
- When playing side A of an LD, CD or CDV, or when the player is stopped, the SIDE A indicator on the player lights up. When playing side B of an LD, the SIDE B indicator lights up. When no disc is loaded, both indicators go off.

Note

- When you play a VCR etc. using LINE IN, the current key level always appears on the front panel instead of a chapter/track number.

To start playing from the beginning of each LD side
Press DISC SIDE A to play the upper side of the LD from the beginning.
Press DISC SIDE B to play the other side of the LD from the beginning.

To play only one side of an LD.
Press 1/SIDE/ALL twice. "ONE SIDE" appears briefly.
Press ▷ (Play) or DISC SIDE A/B.
The current side of the LD is played once.



To stop playing and turn off the player
Press POWER.
You can resume playback from the point you stopped at by simply pressing ▷ (Play) on the player (Not operable on the remote commander. See "Resuming LD playback" on page **18**).

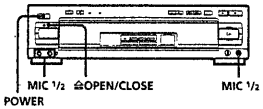
To stop playing and remove the disc
Press ⏏ OPEN/CLOSE.
Remove the disc and press ⏏ again to close the empty tray.

To pause playing just before starting
Press ❚❚ PAUSE instead of doing step **4** on page **8**.
The disc tray closes and the player waits at the start of the disc until you press ▷ PLAY or ❚❚ PAUSE. If you want to start from side B of an LD, press ❚❚ PAUSE, then DISC SIDE B.

Chapter/Track number display on the front panel

Indication	Current status of the player
12	Playing chapter/track 12
--	Searching for the beginning of the disc side
00	Playing chapter "0" of an LD
0	Stopped
-Y	Modulated key level (appears briefly)
Not lit	No disc is loaded

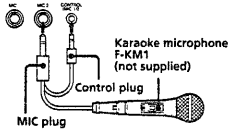
Playing Karaoke



This section gives you short instructions for playing "karaoke" (singing along with a disc).

1 **Set the MIC 1/2 control on the player to MIN.**

2 **Plug a microphone into the MIC 1 or 2 jack on the LD player.**
When using the karaoke microphone F-KM1 (not supplied), plug the CONTROL plug into the CONTROL (MIC 1/2) jack.

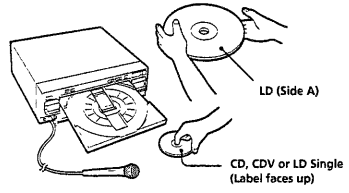


3 **Press POWER to switch on the player.**

4 **Turn on the TV and stereo system.**
TV:
Set to "Video."
Stereo system:
Turn on the amplifier or receiver and select CD or AUX for audio output.

5 **Press ≜ OPEN/CLOSE.**
The disc tray comes out.

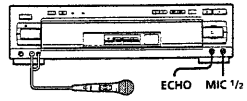
6 **Place a disc on the disc tray.**

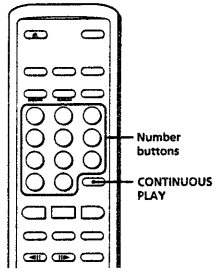


Place only one disc, carefully fitting it in the circle on the tray.

Tips
- You can plug in two microphones.
- To control the player from the microphone, plug the control plug into the CONTROL jack (see "Using the optional karaoke microphone" on page **17**).
- You can enjoy playing karaoke, using auxiliary equipment such as a VCR (see "Playing karaoke using auxiliary equipment" on page **17**).

Notes
- If you insert more than one disc, or if the disc is not seated properly, the disc may not start playing. It may cause damage to the disc or the player.
- When playing a double-sided LD, the player determines that the upper side of the disc is side "A" and the other side is "B," regardless of the label "A" or "B" printed on the disc.





Tips
- The MDP-A600K is automatically set to karaoke mode by connecting a microphone. In karaoke mode, the player pauses every time a selection is played (Auto Pause). To play selections on the disc continuously, press CONTINUOUS PLAY on the remote commander. "A. PAUSE OFF" appears on the screen. To reactivate Auto Pause, press CONTINUOUS PLAY again. "A. PAUSE" appears on the screen. If you reserve the next selections to be played (see "Specifying the next selections" on page **12**), the player plays them continuously, then pauses.
- If howling occurs
  - Move the microphone away from the speakers.
  - Lower the microphone volume or echo level.
  - Lower the volume.
- If the sound is distorted or the picture flickers when listening through your TV speakers, set the ATT selector at the rear of the player to lower the output level.

7 **Press one of the number buttons to enter the selection you want to play.**
The disc tray automatically closes and the selection starts playing. To choose a selection on side B of the LD, press (DISC) SIDE B, then press the number button.

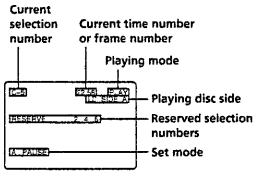
8 **Set the ON/OFF switch on the microphone to ON and turn the MIC 1/2 control to adjust the microphone volume.**
The same volume is applied to both MIC 1 and MIC 2.

9 **Turn the ECHO control to adjust the strength of echo.**
The same echo level is applied to both MIC 1 and MIC 2.

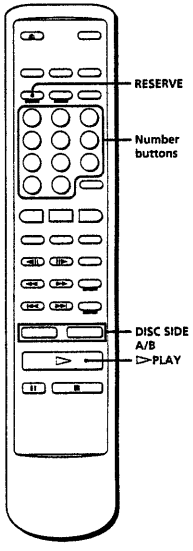
Now you can enjoy playing karaoke. After the selection is played, the player pauses and waits for the next selection.

Displaying the on-screen indications

Press DISPLAY twice to turn on the on-screen indications. To turn off the indications, press DISPLAY once again.



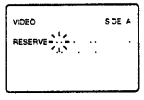
Specifying the next selections (Reserve)



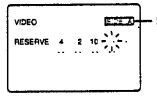
You can specify up to 9 selections to be played in any order, regardless of disc side, even while a selection is being played. The selections are played continuously in the order you specify so that you can enjoy non-stop karaoke playing. The MDP-A600K also allows you to specify selections on another disc in advance (Next Disc Reserve).

Specifying selections on the current disc

1 **Press RESERVE.**
"RESERVE" appears.

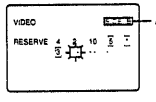


2 **Select the disc side by pressing DISC SIDE A (or B), then press the number buttons to specify selections in the order you want them to play.**

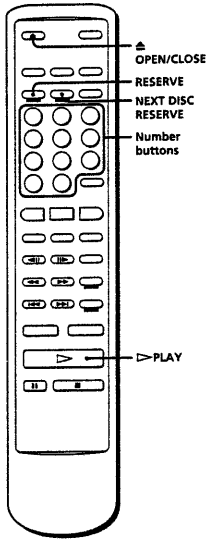


If you enter a wrong number, press CLEAR. With each press, the selection you have entered last is deleted.

3 **To enter selections from the other disc side, press DISC SIDE B (or A), then press the number buttons to specify the selections in the order you want them to play.**



4 **Repeat steps 2 and 3 until finished.**



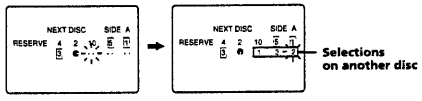
5 **Press RESERVE.**
On-screen indications disappear.

When you have specified selections while playing a selection, the selections start playing without pausing after the current selection.

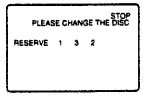
When you have specified selections while the player is stopped, press ▷ PLAY. The selections start playing.

Specifying selections on another disc (Next Disc Reserve) LD disc only

1 **Press NEXT DISC RESERVE after steps 1 to 4 above.**
"◐" appears on the screen, rotating. Now you can specify selections on another disc. Follow steps 2 (and 3) above to specify the selections.



2 **Press RESERVE (then ▷ PLAY).**
The selections on the current disc are played, then the player stops automatically, and prompts you to change the disc.



3 **Press ≜ OPEN/CLOSE to open the disc tray, then change the disc.**

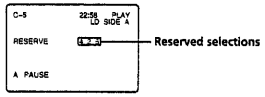
4 **Press ▷ PLAY or push in the disc tray.**
The specified selections on the new disc start playing automatically.

Specifying the next selections (continued)

To enter a number greater than 10
Press +10 on the remote commander, then one of the number buttons.
If you press +10 by mistake, press +10 repeatedly until "– –" flashes, then enter the correct number.

To	Press
Enter 14	+10, then 4.
Enter 25	+10, +10, then 5
Enter 30	+10, +10, +10, then 0

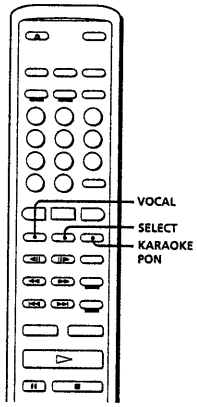
To check the selections to be played
Press DISPLAY twice.
The selection numbers to be played appear. When a selection has been played, its number disappears.



To skip the current selection
Press ▶▶|.
The next reserved selection starts playing.

To cancel Reserve
Press CLEAR.
"CLEAR" appears briefly and the player exits Reserve mode. All the reserved selections are cleared.

Using karaoke functions



Tip
- You can also use Vocal Select to select the sound when playing karaoke video tapes through the LINE IN inputs.

Notes
- When playing multiplex CDVs or multiplex digital LDs in Karaoke mode, the player automatically outputs the backup sound. To listen to the vocals, press VOCAL SELECT. Only VOCAL 1 is available.
- Karaoke Pon is only available for discs recorded in stereo. With monaural discs, the backup level is also lowered.
- You cannot completely shut off the vocals by using Karaoke Pon. Even with stereo discs, if the voice deviates from the centre, its level may not be lowered well.
- When using Karaoke Pon, stereo effect is reduced.

You can enjoy karaoke using various functions.

Singing along with the original vocals (Vocal Select)

You can correct the words or melody you miss by listening to the original vocals. This is available for MULTI AUDIO or multiplex discs, or multiplex tapes.

To listen to the original vocals on MULTI AUDIO LDs
On MULTI AUDIO karaoke LDs, vocals are recorded on an analog track. When playing MULTI AUDIO karaoke LDs, the player automatically outputs the backup sound recorded on digital tracks in stereo. To listen to the vocals, use Vocal Select. You can easily select the analog track on which the vocals are recorded.

1 Press VOCAL to turn on the SELECT button indicator.
2 Press SELECT repeatedly until the vocals are heard.
With each press, the on-screen indication changes as follows:

VOCAL 1 → VOCAL 2 → VOCAL 3 →

Indication	Output sound recorded on
VOCAL 1	Right analog track
VOCAL 2	Left analog track
VOCAL 3	Right analog track (with stereo sound on digital tracks)

To select the sound when playing multiplex karaoke discs
When playing multiplex karaoke discs (CDs or analog LDs), select whether to output only the backup sound or the sound with the original vocals by using Vocal Select.

1 Press VOCAL to turn on the SELECT button indicator.
2 Press SELECT repeatedly to select the sound.
With each press, the on-screen indication changes as follows:

VOCAL 1 → VOCAL 2 →

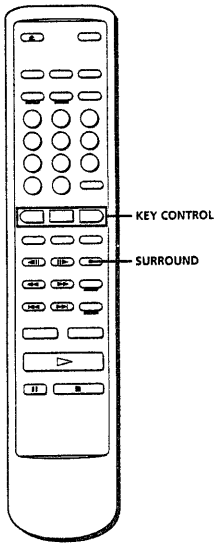
Indication	Output
VOCAL 1	Also with vocals
VOCAL 2	Only the backup sound

Enjoying karaoke with non-karaoke discs (Karaoke Pon)

With a disc recorded in stereo, you can enjoy karaoke even if it is a non-karaoke disc.

Press KARAOKE PON on the remote commander to turn on the KARAOKE PON indicator on the player.
The level of the singer's voice is lowered.

Using karaoke functions (continued)



Tips

- When the higher or lower key is set, the # UP or ♭ DOWN indicator on the player lights up. The NATURAL indicator is always lit.
- The key returns to the original key when playback pauses automatically at the end of a chapter/track. If Auto Pause is cancelled, or when playing in single repeat mode, the key does not return.
- The key is adjustable from the karaoke microphone (see "Using the optional karaoke microphone" on page **17**).
- You can also use Surround in non-karaoke mode.
- You cannot use Surround and Karaoke Pon at the same time.
- You cannot use Surround and Vocal Select at the same time.

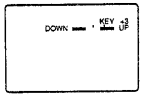
Changing the backup key (Key Control)

You can adjust the backup key to your singing key.

Press # UP or ♭ DOWN repeatedly to find the backup key that suits your singing.

To	Press
Raise the key	# UP
Lower the key	♭ DOWN
Return to the original key	♮ NATURAL

The key is adjustable to one of 17 steps (8 steps higher, 8 steps lower than the original key and the original key). The set step appears on the screen briefly.



To return to the original key, press ♮ NATURAL.

Playing a disc with sound effect (Surround)

You can play a disc in one of three acoustic atmospheres: SIMULATED, KARAOKE BAR or MOVIE.
Press SURROUND repeatedly to select the mode of effect.
With each press, the mode of effect changes as follows:

SIMULATED → KARAOKE BAR → MOVIE → SURROUND OFF

The SURROUND MODE indicator on the player lights up.
To cancel the surround effect, press SURROUND repeatedly until "SURROUND OFF" appears. The SURROUND MODE indicator goes off.

Effect mode	Atmosphere
SIMULATED	Good for playing software recorded in monaural. Enhances the dynamic range for monaural programmes like old movies and news programmes.
KARAOKE BAR	Creates the effect of singing in a bar. Gives your song a rich carrying tone.
MOVIE	Suitable for movie software. Emphasizes the bass and extends the dynamic mid range.

Tip

- When using two microphones, Repeat Singing and Key Control are only operable on the microphone connected to the CONTROL (MIC 1/2) jack.

Note

- When you play a VCR etc. using LINE IN:
  - Always turn on the LD player.
  - Stop playing the disc by pressing ■ STOP. When playing a disc, you cannot use LINE IN.
  - The AUDIO MONITOR button on the remote commander is not operable.
  - Vocal Select operates as it would do for CDs (VOCAL 1 and VOCAL 2).

Using the optional karaoke microphone

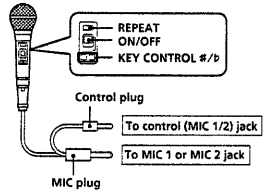
You can control the player from the karaoke microphone (F-KM1, not supplied) by connecting the control plug to the CONTROL jack on the LD player.

Singing Repeatedly

You can go back to any point of a selection using the REPEAT button on the microphone. Hold down REPEAT and release it at the desired point. Playback continues again from the point at which the button is released.

Using Key Control

You can change the backup key by pressing KEY CONTROL #/♭ on the microphone. This is the same operation as KEY CONTROL on the LD player or remote commander (see "Changing the backup key" on page **16**).

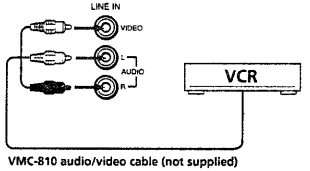


Playing karaoke using auxiliary equipment

You can also enjoy karaoke by connecting auxiliary equipment such as a VCR to the LINE IN AUDIO/VIDEO inputs on the player. The karaoke functions (Vocal Select, Key Control, Surround Effects and Karaoke Pon) are available as they would be for discs.

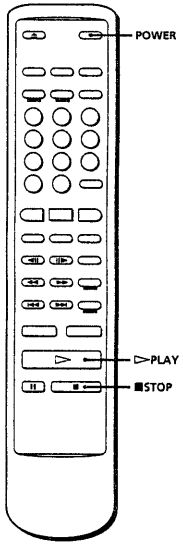
1 Connect the VCR to the LINE IN AUDIO/VIDEO inputs on the rear.
2 Press LINE IN on the player. The LINE IN indicator on the player lights up.

Now you can enjoy playing karaoke with your video tape.
To return to playing a disc, press ▷ PLAY.



VMC-810 audio/video cable (not supplied)

Resuming LD playback (Auto Resume)



This function can only be used for LDs. Once you stop playing by pressing ■ STOP or POWER, the player stores the point you stopped at so that you can continue viewing from the same point.

1 **Press ■ STOP (or POWER) to stop playback.**
The AUTO RESUME indicator on the player lights up and the point you stopped at is stored. (When you press POWER, the indicator lights up briefly, then goes off with the power.)

2 **Press ▷ PLAY.**
The player searches for the scene where you stopped playing, then playback starts. If you want to pause playing just before starting, press ❚❚ PAUSE instead of ▷ PLAY.

To view from the beginning of the LD

Press (DISC) SIDE A.

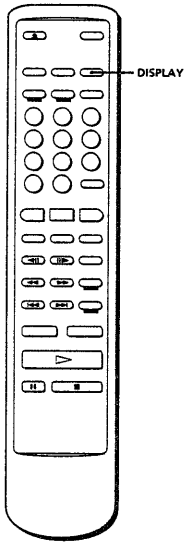
Tip

- The point where you stopped playing is cleared when:
  - you press ⏏ OPEN/CLOSE. (DISC) SIDE A/B or I◀◀ / ▶▶I ACS/AMS.
  - you carry out a Chapter Search.

Note

- If the power is off, press ▷ (Play) on the player. The player turns on automatically and resumes playback. When you use the remote commander, press POWER, then ▷ PLAY.

Understanding on-screen indications



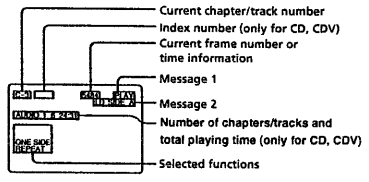
Notes

- When playing an LD which does not contain chapters, the chapter number does not appear.
- When playing a CLV LD which does not contain time data to the second, a two-digit number such as "22:", meaning 22 minutes, appears.

You can check the player operating status or disc information on the TV screen.

Displaying on-screen indications

Press DISPLAY twice.
To turn off the indications, press DISPLAY once again.
When pressing DISPLAY once, only the first line appears.


Current chapter/track number
Index number (only for CD, CDV)
Current frame number or time information
Message 1
Message 2
Number of chapters/tracks and total playing time (only for CD, CDV)
Selected functions

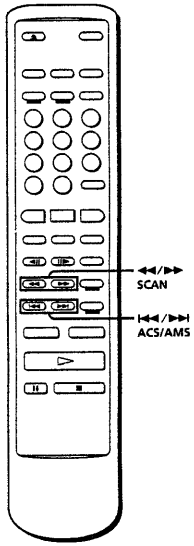
Message 1

Display	Current status of the player
OPEN	Disc tray open
CLOSE	Disc tray closed
PLAY	Playing a disc
STOP	Operation stopped
PAUSE	Operation momentarily stopped
◀◀ / ▶▶	Speed scanning
SEARCH	Searching

Message 2

Display	Currently playing
LD SIDE A	Side A of LD
LD SIDE B	Side B of LD
CD	CD
CDV	CDV
1/L	First soundtrack/left channel
2/R	Second soundtrack/right channel
♪ DIGITAL	Digital sound
♪ ANALOG	Analog sound

Searching for a particular point on the disc



The LD player has various "search" functions. You can locate a particular point on a disc by scanning scenes or skipping chapters/tracks. You can also specify a chapter/track number directly.

Scanning a disc quickly (Speed Scan)

Hold down ◀◀/▶▶ SCAN while playing the disc.

To	Hold down
Scan forward	▶▶ SCAN
Scan backward	◀◀ SCAN

To resume normal playback, release ◀◀/▶▶ SCAN.

Skipping chapters or tracks (Skip Search)

Press or hold down I◀◀ /▶▶I ACS/AMS.

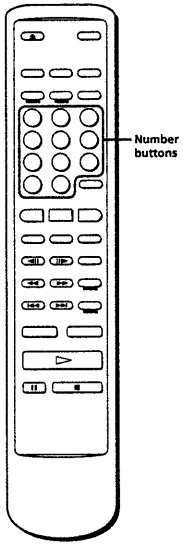
To go to the beginning of	Press
Next chapter/track	▶▶I ACS/AMS once
Current chapter/track	I◀◀ ACS/AMS once
Previous chapter/track	I◀◀ ACS/AMS twice before the picture or sound resumes

Hold down ▶▶I or I◀◀ to skip chapters/tracks continuously.

Note
- When scanning a CLV LD or CDV, frames are skipped.

Tips
- ACS/AMS is the abbreviation for Automatic Chapter Sensor/Automatic Music Sensor.
- In addition to normal play mode, you can conduct Speed Scan and Skip Search while in Freeze Frame (CAV LD), Repeat or Pause mode. After the scan or search, playback continues in the same mode.

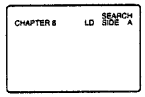
Specifying a chapter or track directly (Chapter/Track Search)



LDs are divided into sections called "chapters." CDs and CDVs are divided into sections called "tracks." Simply enter the desired chapter/track number to go to a chapter or track and start playing it immediately.

Locating a particular chapter/track

Press one of the number buttons to enter the chapter/track number while playing the disc.

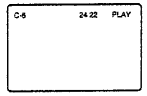


To enter a number greater than 10, press ⑩, then one of the ⓪ – ⑨ buttons. If you press ⑩ by mistake, press CLEAR, then enter the correct number.

To	Press
Enter 14	⑩, then ④.
Enter 25	⑩, ⑩, then ⑤
Enter 30	⑩, ⑩, ⑩, then ⓪

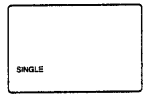
To check the current chapter/track number

Press DISPLAY to display the chapter track number.
The number appears in the upper left-hand corner of the screen. If the LD does not contain chapter numbers, the number is not displayed.



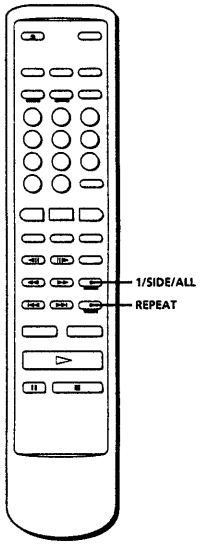
To play only one chapter/track

Press 1/SIDE/ALL once. "SINGLE" appears briefly.
Enter the chapter/track number using the number buttons.
The chapter or track is played once.



Tips
- In addition to normal play mode, you can conduct Chapter/Track Search while in Freeze Frame (CAV LD), Repeat or Pause mode. When the specified chapter or track is located after the search, playback continues in the same mode.
- When you carry out Chapter/Track search while a selection is paused in karaoke mode, the selected chapter or track starts playing immediately, without entering pause mode.

Playing repeatedly (Repeat Play)



Repeat play allows you to play the disc over and over. You can replay both sides, a single side or one chapter of an LD, and a whole disc or a single track on a CD.

Repeating the whole disc (All Disc Repeat)

Press REPEAT while playing the disc.
"REPEAT" appears briefly. When playing an LD, the player repeats playing both disc sides, side A to B. When playing a CD or CDV, the player repeats playing all the tracks on the disc.

Repeating the current side of the LD (One Side Repeat)

Press 1/SIDE/ALL twice, then REPEAT while playing the disc.
"ONE SIDE" and "REPEAT" appear briefly. The player repeats playing the current disc side.

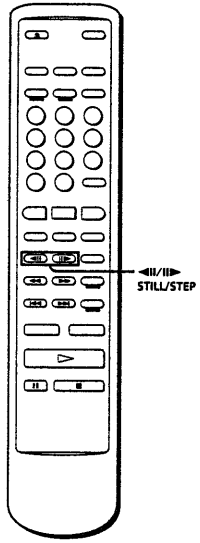
Repeating the current chapter/track (Single Repeat)

Press 1/SIDE/ALL once, then REPEAT while playing the disc.
"SINGLE" and "REPEAT" appear briefly. The player repeats playing the current chapter/track.

To check the replaying status
Press DISPLAY twice.

To cancel Repeat Play
Press CLEAR.
All Disc, One Side or Single Repeat is cancelled.

Viewing frame-by-frame action



Tip
- When you play a CLV LD, Freeze Frame and Step Play are not available. When you press II PAUSE, the screen goes blank. If you press ◀II /II▶ STILL/STEP, "CLV SIDE A" appears briefly.

This function can only be used for CAV LDs. On any scene, you can freeze an action into a still picture, or advance or reverse the action frame-by-frame.

Freezing the action (Freeze Frame)

Press II PAUSE or one of the ◀II/II▶ STILL/STEP buttons while playing a CAV LD.
The sound mutes and the picture freezes.

To resume normal playback
Press ▷ PLAY.

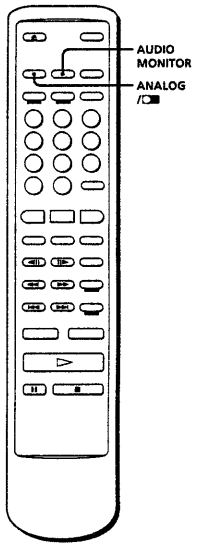
Playing frame-by-frame (Step Play)

1 **Press one of the ◀II/II▶ STILL/STEP buttons while playing a CAV LD.**
The sound mutes and the picture freezes.

2 **Press ◀II or II▶ repeatedly to advance or reverse the action frame-by-frame.**
Hold down ◀II or II▶ to view continuous frame-by-frame action.

To resume normal playback
Press ▷ PLAY.

Using the sound quality functions



Note

- The output level may differ between digital and analog sound.

Playing a stereo disc or Second Audio Programme (SAP) disc

When playing SAP discs such as bilingual discs, you can alternate the sound output using AUDIO MONITOR.

Alternating the sound output

Press AUDIO MONITOR while playing the disc.
Each time you press AUDIO MONITOR, the on-screen indication changes as follows:

1/L → 2/L → 1/L 2/R

Indication	From stereo disc	From SAP disc
1/L	Left channel	Sound track 1 (Left channel)
2/R	Right channel	Sound track 2 (Right channel)
1/L 2/R	Stereo (Both channels)	Sound track 1 (Left channel) Sound track 2 (Right channel)

When you select 1/L (or 2/R), the sound of the left (or right) channel is output from both speakers.

Listening to analog sound on an LD

If your LD contains digital soundtracks, the player automatically outputs digital sound. To listen to sound recorded on analog soundtracks, use ANALOG/.

Press ANALOG/ while playing the disc.
"♪ ANALOG" appears briefly and the analog sound is output.

To return to digital sound

Press ANALOG/ repeatedly until "♪ DIGITAL" appears.

Discs with a (CX) logo

LDs bearing the logo are recorded with the CX noise reduction system, which gives lower noise level and higher dynamic range on analog sound. The player detects most discs and activates the CX noise reduction system automatically when outputting analog sound. If your LD does not contain a code to activate the CX noise reduction system, you can activate the CX noise reduction system manually. Press ANALOG/ repeatedly until "CX ON" appears. The CX noise reduction system is activated.

Optical discs (continued)

Optical Disc Maintenance

Holding CDs or CDVs

Hold CDs and CDVs by putting your index finger through the centre hole and grasping the edge of the disc with the thumb and other fingers as pictured in the illustration.

Holding LDs

Hold LDs by grasping the outside edge in both hands as illustrated.

Light Exposure

Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave the disc in a car parked in direct sunlight where there can be a considerable rise in temperature.

Cracked or Damaged Discs

Do not play cracked or damaged discs, or try to play discs that have been repaired with adhesive glues.

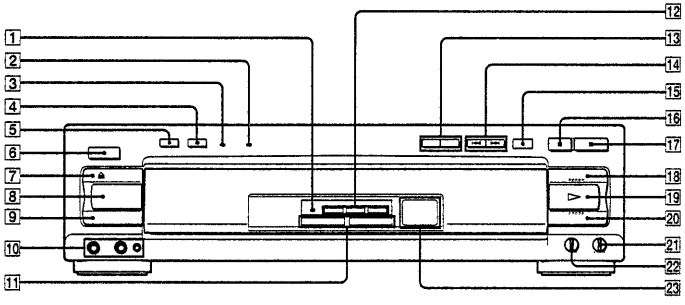
Keeping the Disc Surface Clean

Clean the surface of the disc before playing, using a soft, dry, cleaning cloth. Wipe the disc from the centre out. Do not use solvents such as benzine, paint thinner, commercially available cleaners, or anti-static spray intended for LP record discs.
To prevent marring, after playing, remove the disc and put it back into its jacket.
Putting your fingers on, or adhering anything to the surface of the disc such as sticky note pad paper or adhesive tape will deteriorate the quality of the playing surface, and thus the output quality.

Index to parts and controls

See the pages indicated in ( ) for details.

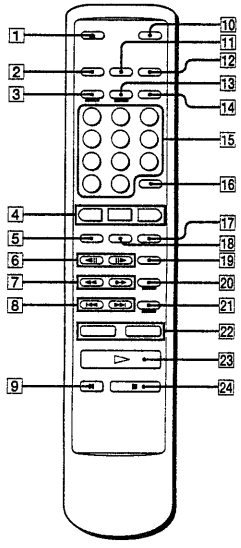
Front



1 KARAOKE PON indicator (15)
2 LINE IN indicator (17)
3 SURROUND indicator (16)
4 SELECT button and indicator (15)
5 VOCAL button (15)
6 POWER switch (8)
7 ⏏ OPEN/CLOSE button (8)
8 Remote sensor (25)
9 LINE IN button (17)
10 MIC 1/2 and CONTROL (MIC 1/2) jacks (10)
11 SIDE A/B indicators (9)
12 KEY CONTROL indicators (16)
13 KEY CONTROL ♭ DOWN/# UP buttons (16)
14 ⏮/⏭ ACS/AMS buttons (20)
15 AUTO RESUME indicator (18)
16 ⏸ (Pause) button (8)
17 ■ (Stop) button (8)
18 SIDE A button (9)
19 ▷ (Play) button (8)
20 SIDE B button (9)
21 MIC 1/2 control (10)
22 ECHO control (11)
23 Chapter/track number indicator (9)

Index to parts and controls (continued)

Remote commander



1 ⏏ OPEN/CLOSE button (8)
2 ANALOG/⊠ button (24)
3 RESERVE button (12)
4 KEY CONTROL buttons (16)
  # UP
  ♮ NATURAL
  ♭ DOWN
5 VOCAL button (15)
6 ◀⏸/⏸▶ STILL/STEP buttons (23)
7 ◀◀/▶▶ SCAN buttons (20)
8 ⏮/⏭ ACS/AMS buttons (20)
9 ⏸ PAUSE button (8)
10 POWER switch (8)
11 AUDIO MONITOR button (24)
12 DISPLAY button (19)
13 NEXT DISC RESERVE button (13)
14 CLEAR button (12) (22)
15 Number buttons (21)
16 CONTINUOUS PLAY button (11)
17 KARAOKE PON button (15)
18 SELECT button (15)
19 SURROUND button (16)
20 1/SIDE/ALL button (22)
21 REPEAT button (22)
22 DISC SIDE A/B buttons (9)
23 ▷ PLAY button (8)
24 ■ STOP button (8)

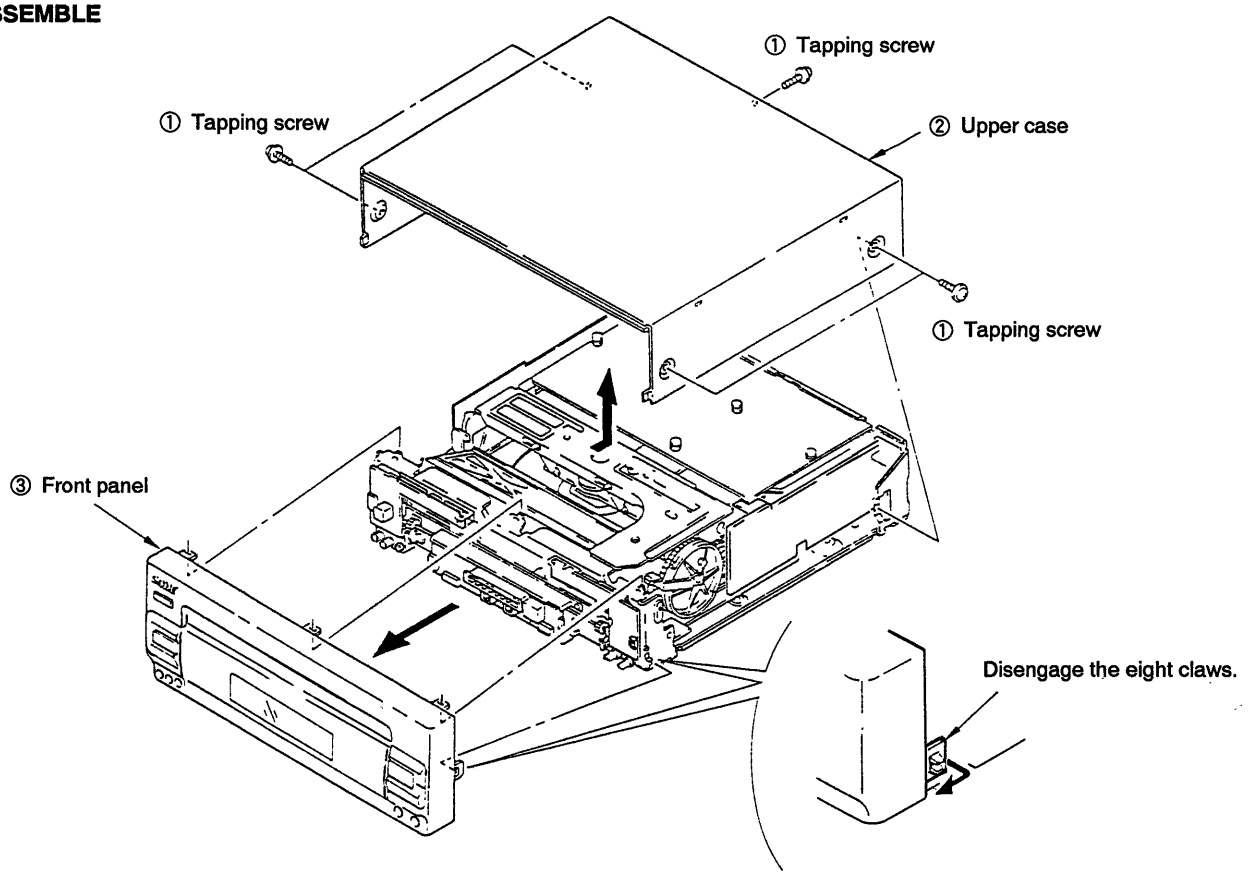
A function activated by pressing a button with a yellow mark can be cancelled by pressing the CLEAR button.

SECTION 2
DISASSEMBLY

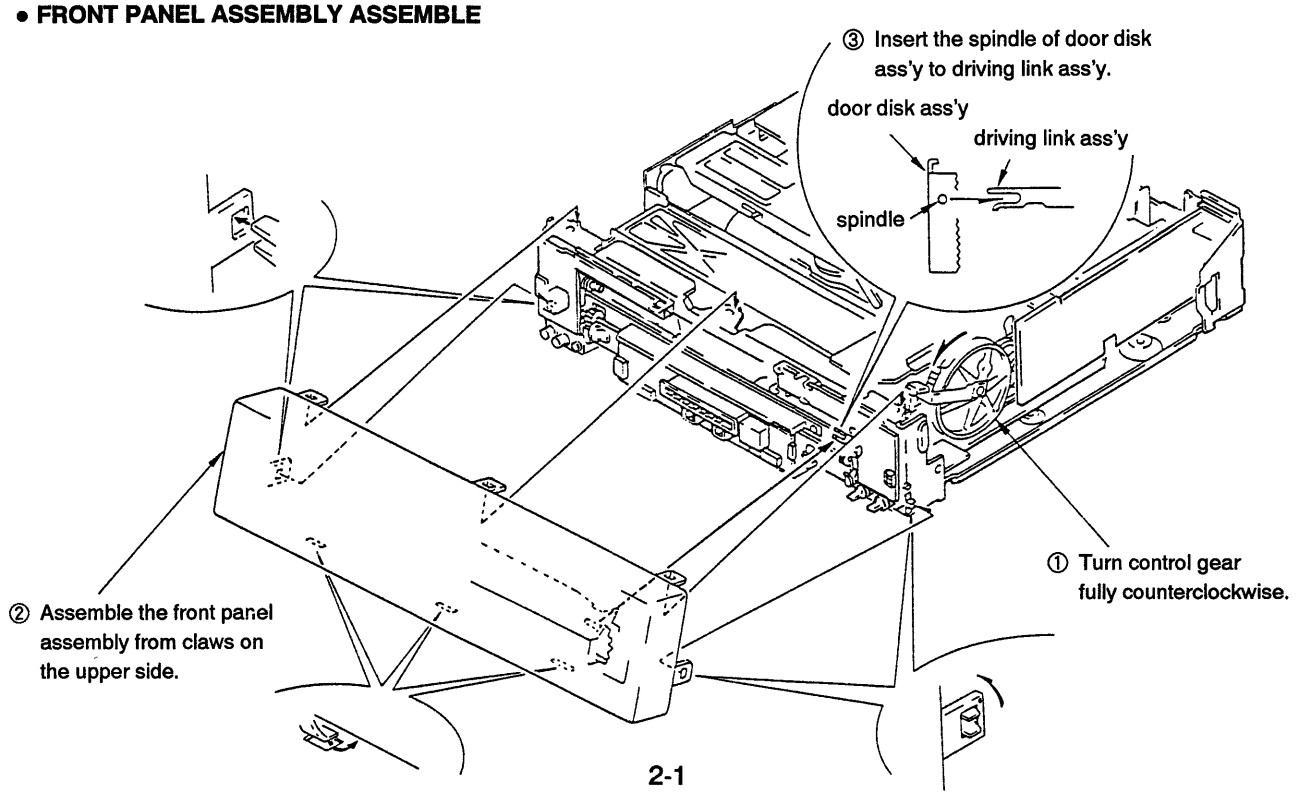
NOTE : Follow the disassembly procedure in the numerical order given.

2-1. UPPER CASE, FRONT PANEL ASSEMBLY

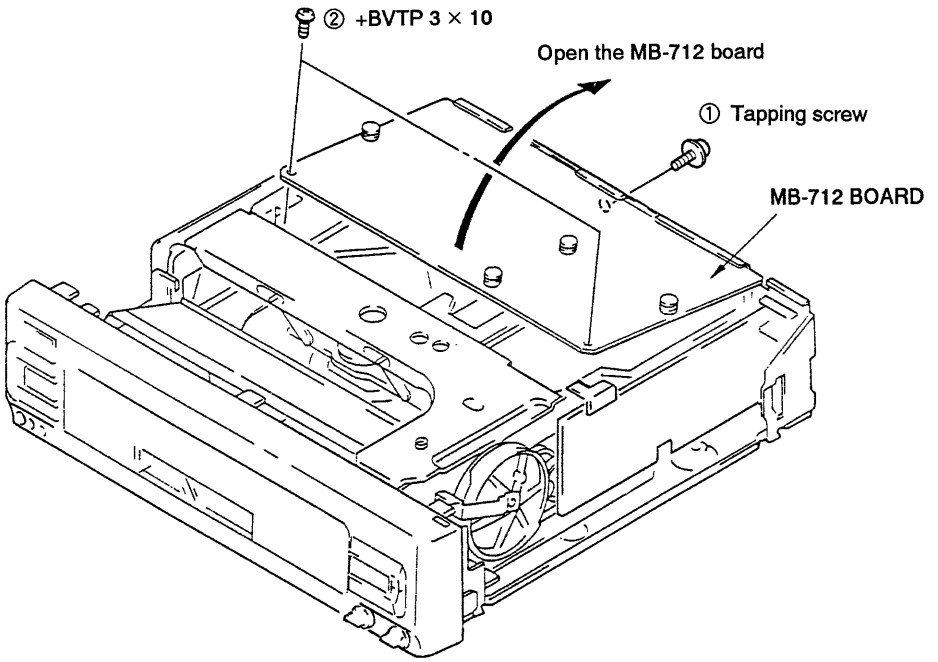
• DISASSEMBLE



• FRONT PANEL ASSEMBLY ASSEMBLE

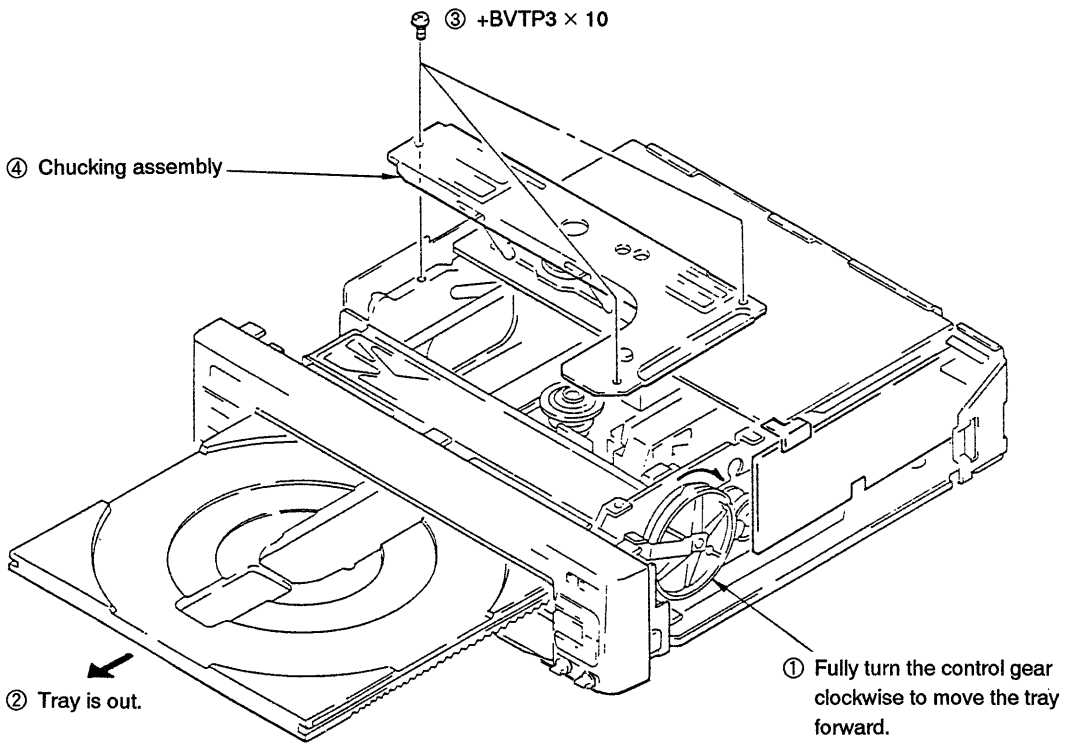

③ Insert the spindle of door disk ass'y to driving link ass'y.
door disk ass'y
driving link ass'y
spindle
① Turn control gear fully counterclockwise.
② Assemble the front panel assembly from claws on the upper side.

2-2. MB-712 BOARD

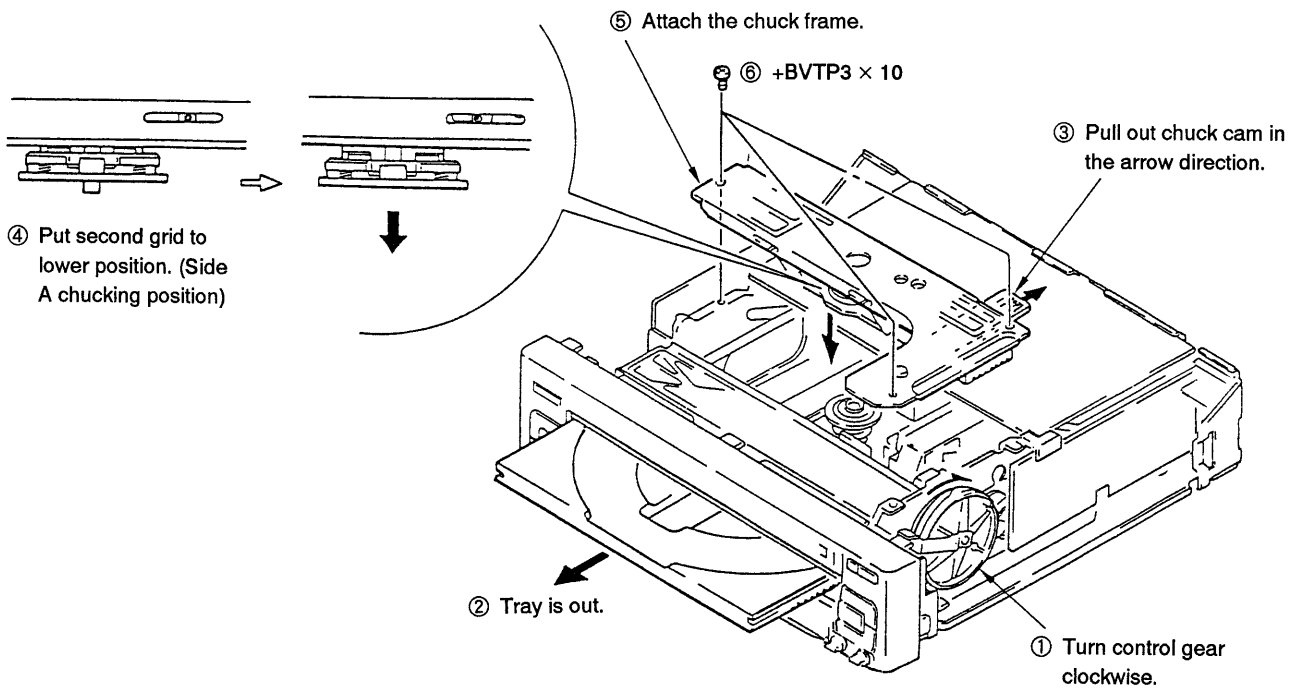


2-3. CHUCKING ASSEMBLY

• DISASSEMBLE

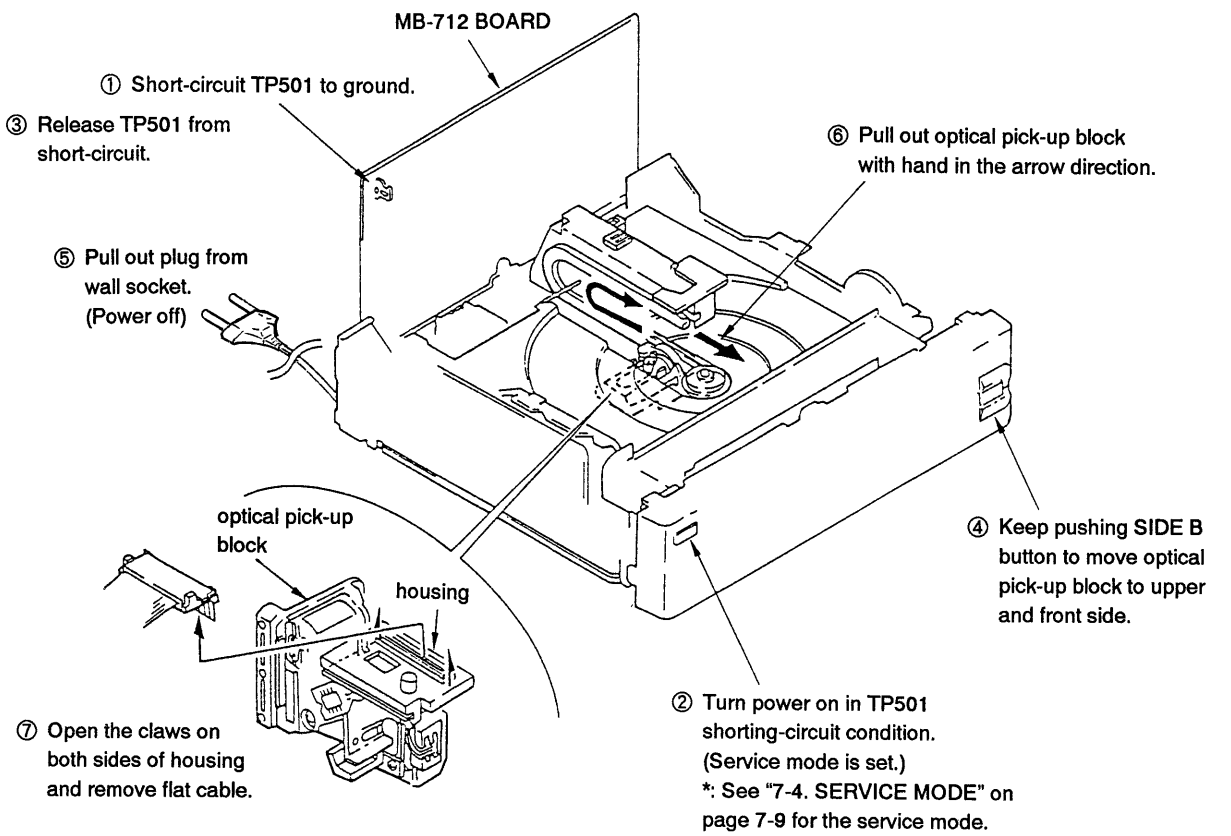


• **ASSEMBLE**


⑤ Attach the chuck frame.
⑥ +BVTP3 × 10
③ Pull out chuck cam in the arrow direction.
④ Put second grid to lower position. (Side A chucking position)
② Tray is out.
① Turn control gear clockwise.

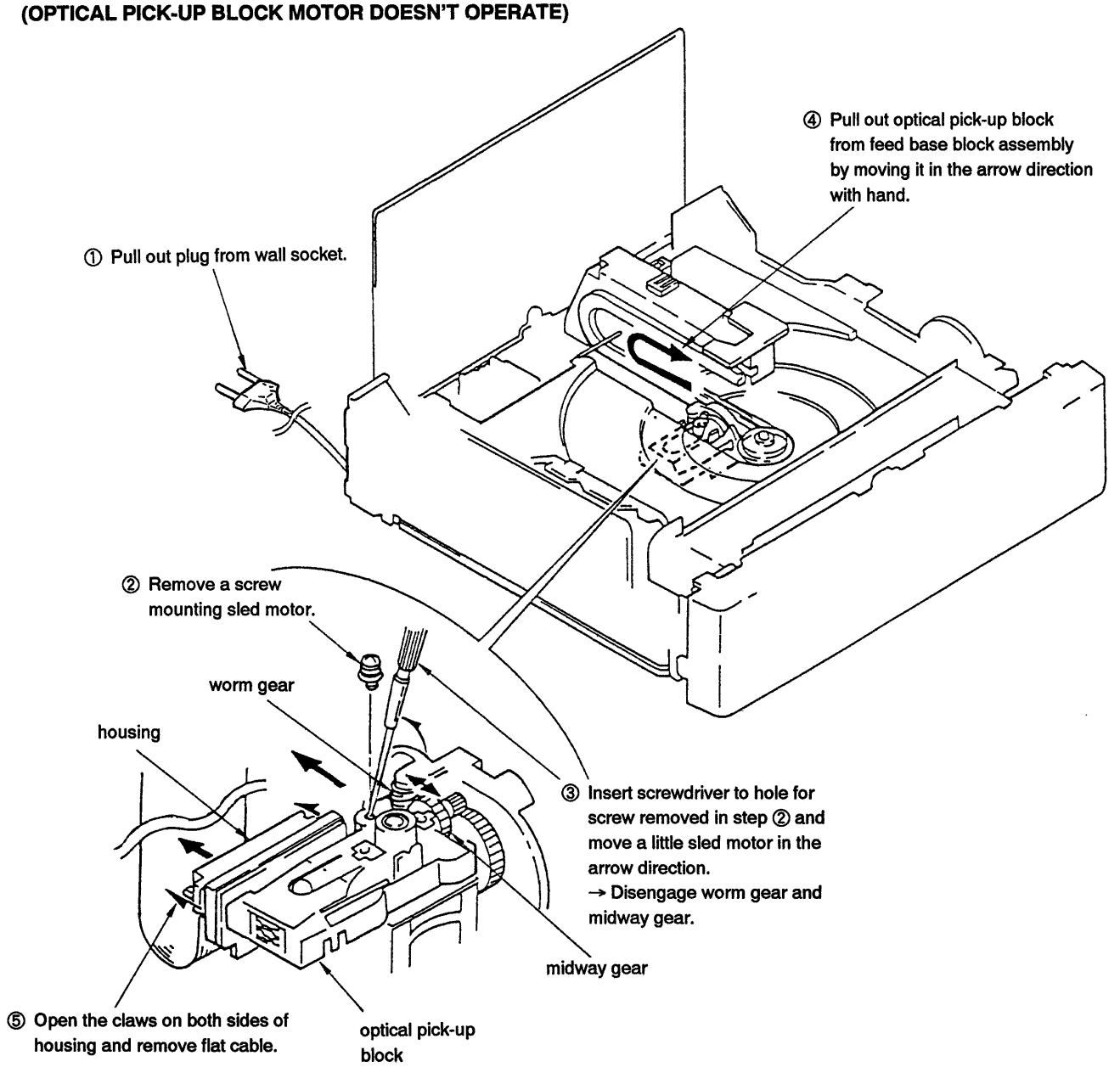
2-4. OPTICAL PICK-UP BLOCK

• **DISASSEMBLE** I
(OPTICAL PICK-UP BLOCK MOTOR OPERATES)


MB-712 BOARD
① Short-circuit TP501 to ground.
③ Release TP501 from short-circuit.
⑥ Pull out optical pick-up block with hand in the arrow direction.
⑤ Pull out plug from wall socket. (Power off)
optical pick-up block
housing
④ Keep pushing SIDE B button to move optical pick-up block to upper and front side.
⑦ Open the claws on both sides of housing and remove flat cable.
② Turn power on in TP501 shorting-circuit condition. (Service mode is set.)
*: See "7-4. SERVICE MODE" on page 7-9 for the service mode.

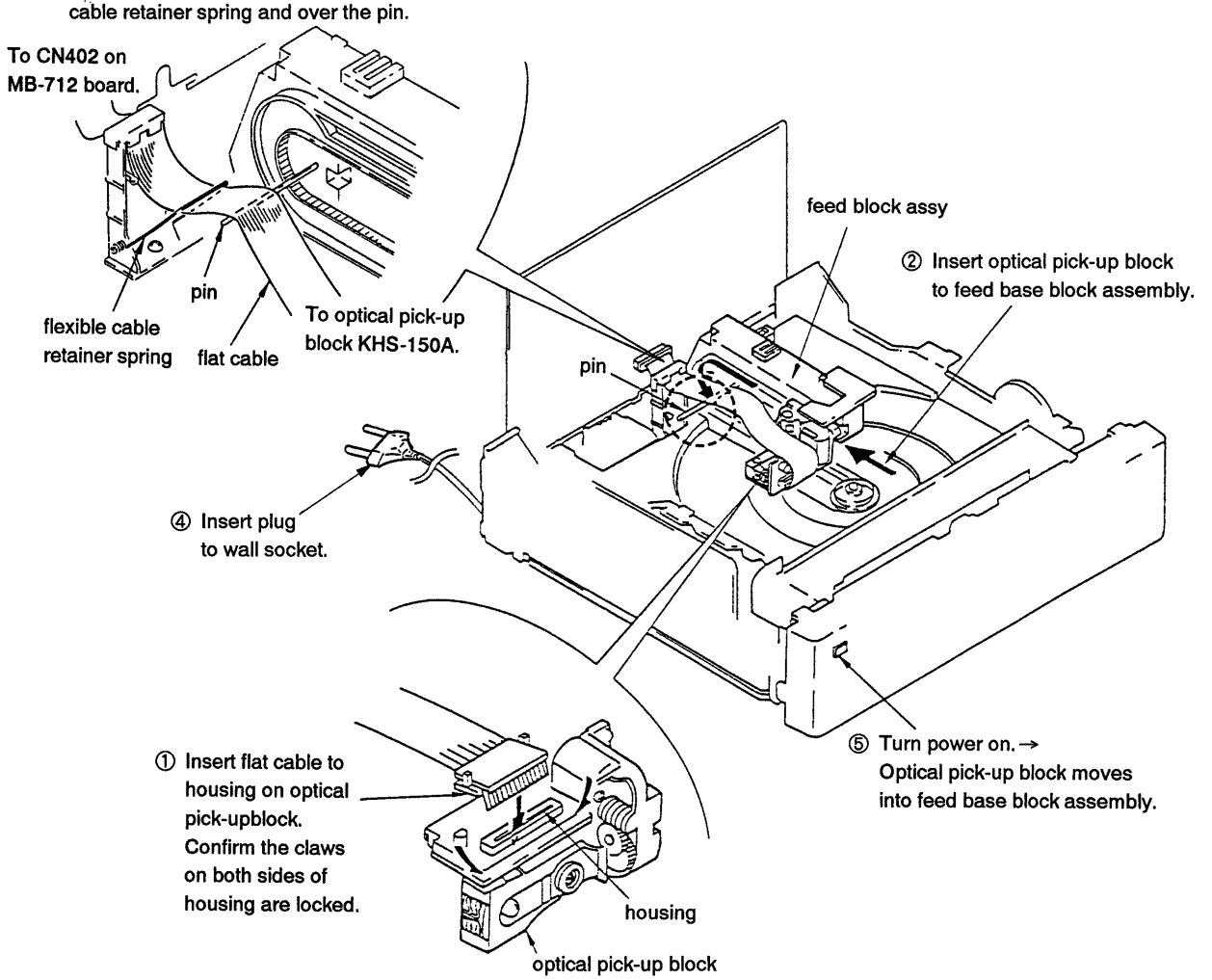
- **DISASSEMBLE Ⅱ**

(OPTICAL PICK-UP BLOCK MOTOR DOESN'T OPERATE)


④ Pull out optical pick-up block from feed base block assembly by moving it in the arrow direction with hand.
① Pull out plug from wall socket.
② Remove a screw mounting sled motor.
worm gear
housing
③ Insert screwdriver to hole for screw removed in step ② and move a little sled motor in the arrow direction.
→ Disengage worm gear and midway gear.
midway gear
⑤ Open the claws on both sides of housing and remove flat cable.
optical pick-up block

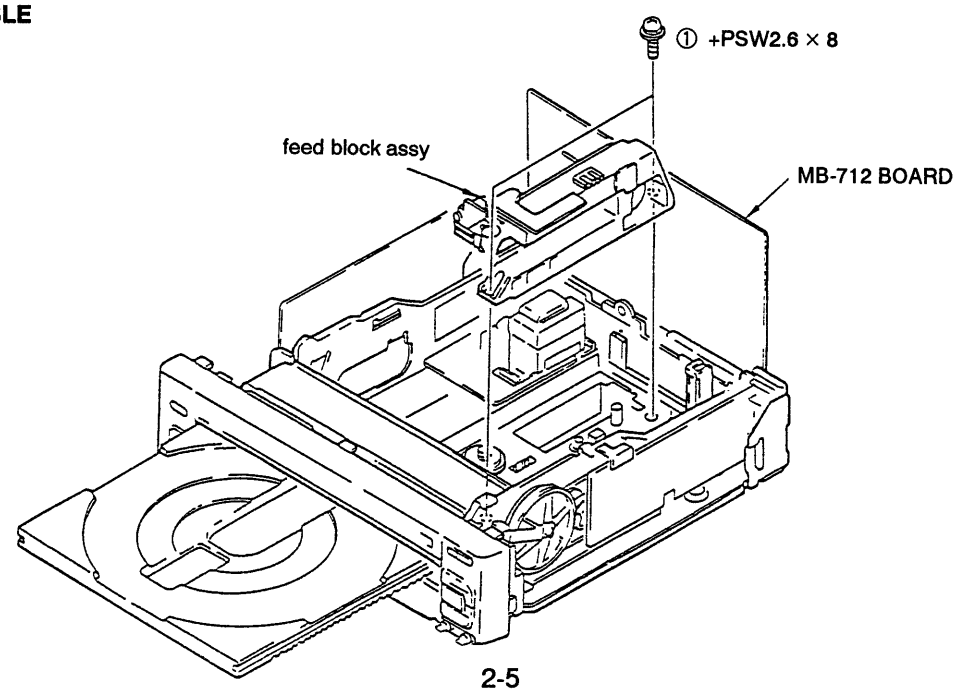
• **ASSEMBLE**

③ Confirm the flat cable goes through the flexible cable retainer spring and over the pin.

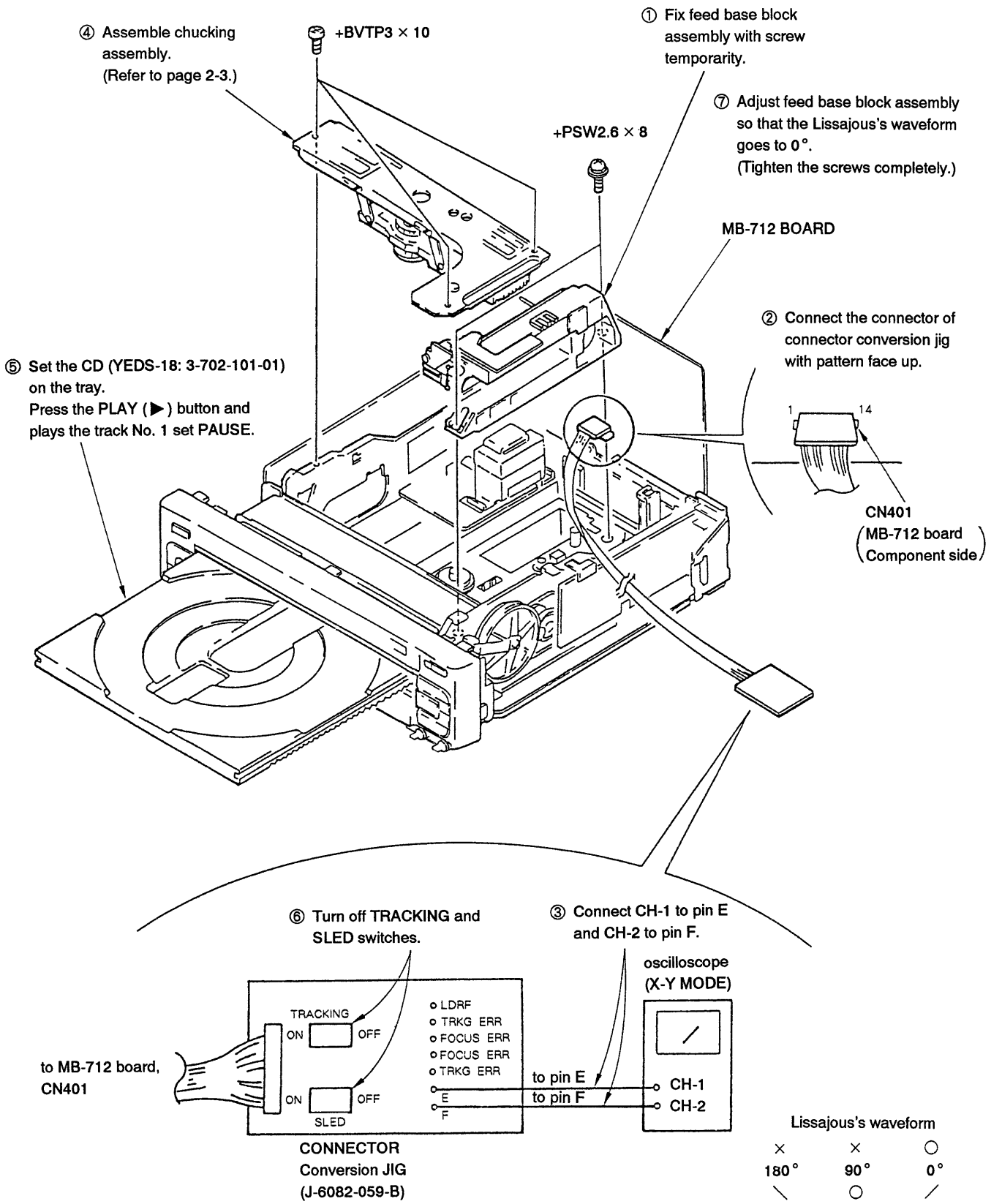

To CN402 on MB-712 board.
pin
flexible cable retainer spring
flat cable
To optical pick-up block KHS-150A.
feed block assy
② Insert optical pick-up block to feed base block assembly.
pin
④ Insert plug to wall socket.
⑤ Turn power on.→ Optical pick-up block moves into feed base block assembly.
① Insert flat cable to housing on optical pick-upblock. Confirm the claws on both sides of housing are locked.
housing
optical pick-up block

2-5. MD CHASSIS ASSEMBLY

• **DISASSEMBLE**

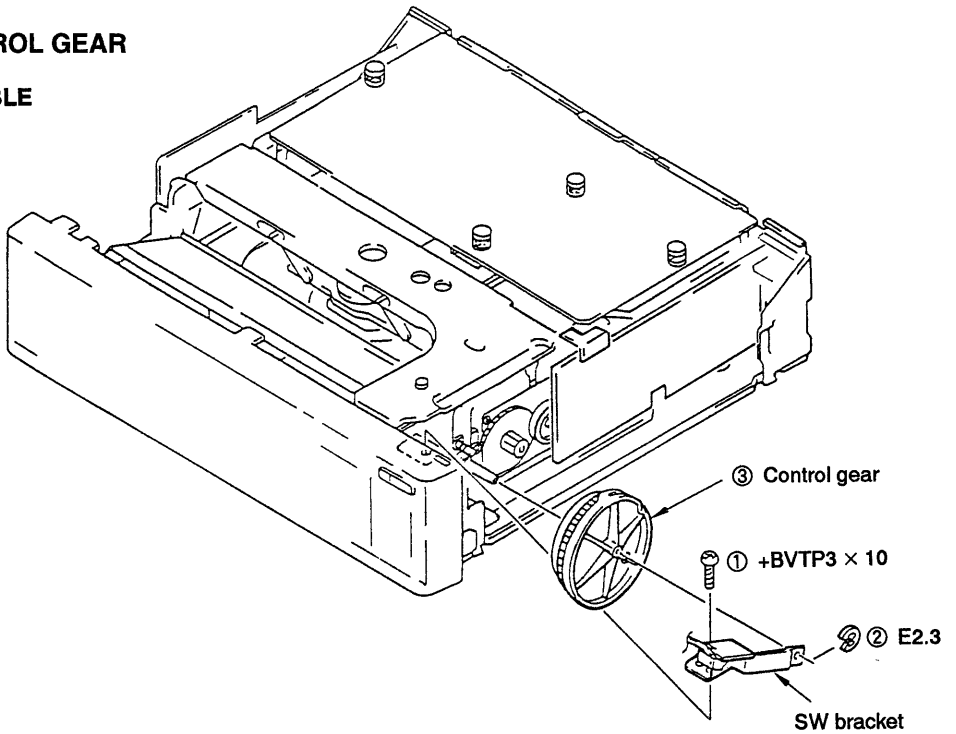


• **ASSEMBLE**


④ Assemble chucking assembly. (Refer to page 2-3.)
+BVTP3 × 10
① Fix feed base block assembly with screw temporarity.
⑦ Adjust feed base block assembly so that the Lissajous's waveform goes to 0°. (Tighten the screws completely.)
+PSW2.6 × 8
MB-712 BOARD
② Connect the connector of connector conversion jig with pattern face up.
⑤ Set the CD (YEDS-18: 3-702-101-01) on the tray. Press the PLAY (▶) button and plays the track No. 1 set PAUSE.
1
14
CN401
(MB-712 board Component side)
⑥ Turn off TRACKING and SLED switches.
③ Connect CH-1 to pin E and CH-2 to pin F.
oscilloscope (X-Y MODE)
TRACKING
ON
OFF
ON
OFF
SLED
LDRF
TRKG ERR
FOCUS ERR
FOCUS ERR
TRKG ERR
E
F
to pin E
to pin F
CH-1
CH-2
to MB-712 board, CN401
CONNECTOR Conversion JIG (J-6082-059-B)
Lissajous's waveform
×
×
○
180°
90°
0°
＼
○
／

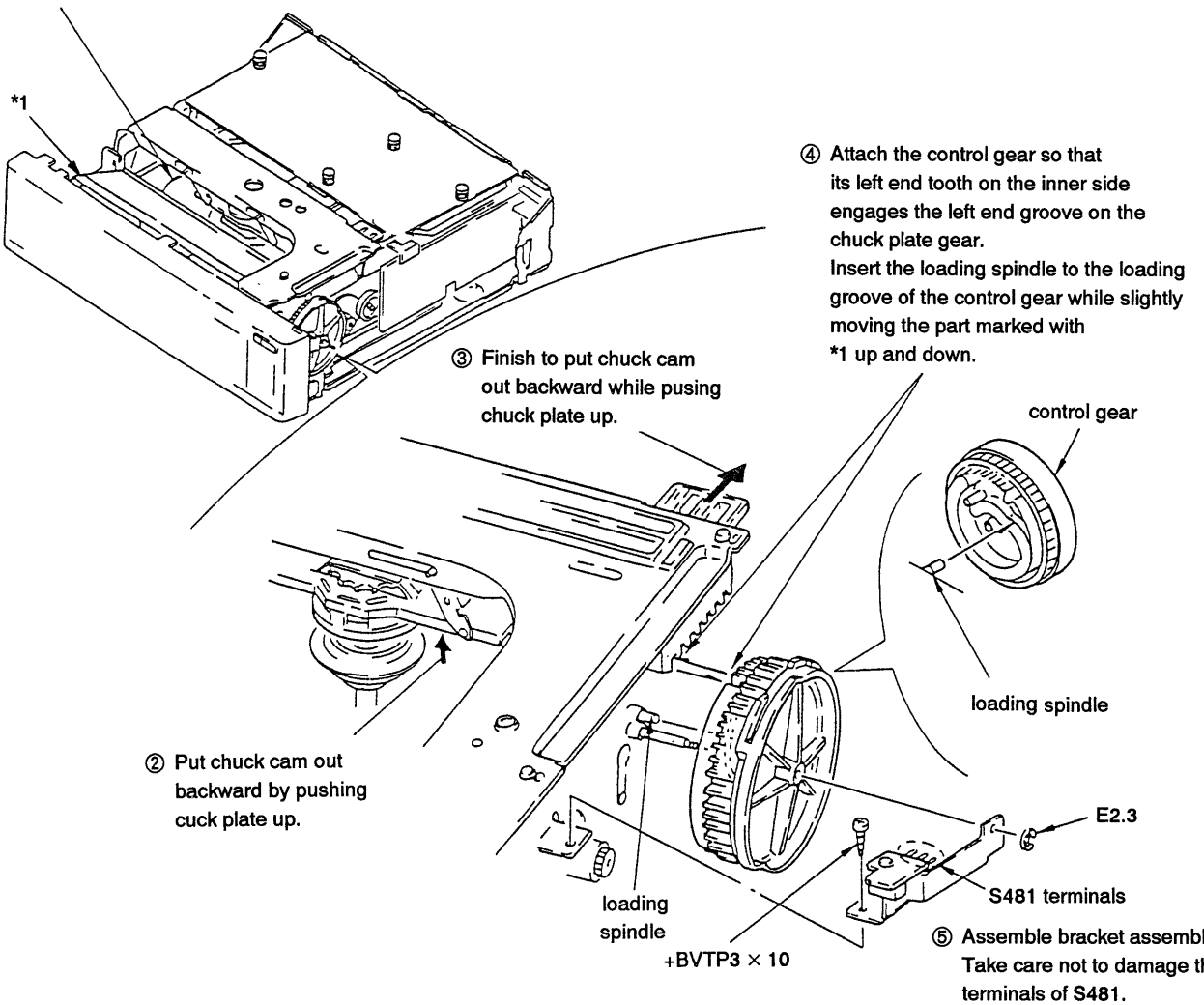
2-6. CONTROL GEAR

• **DISASSEMBLE**



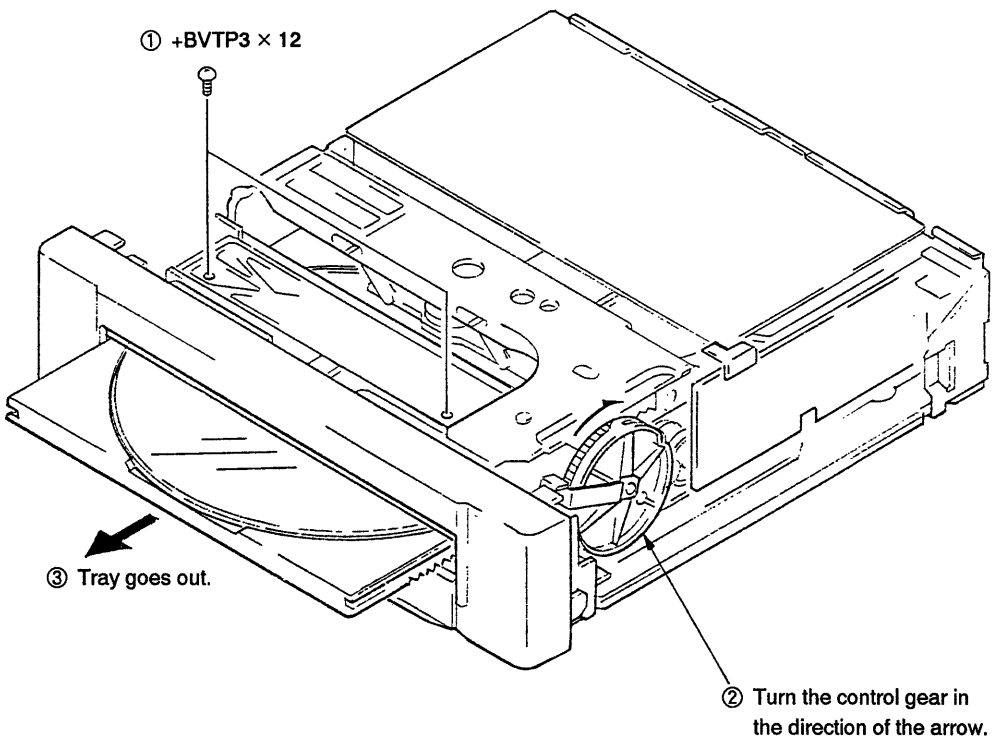
• **ASSEMBLE**

① Make tray holding in the set.

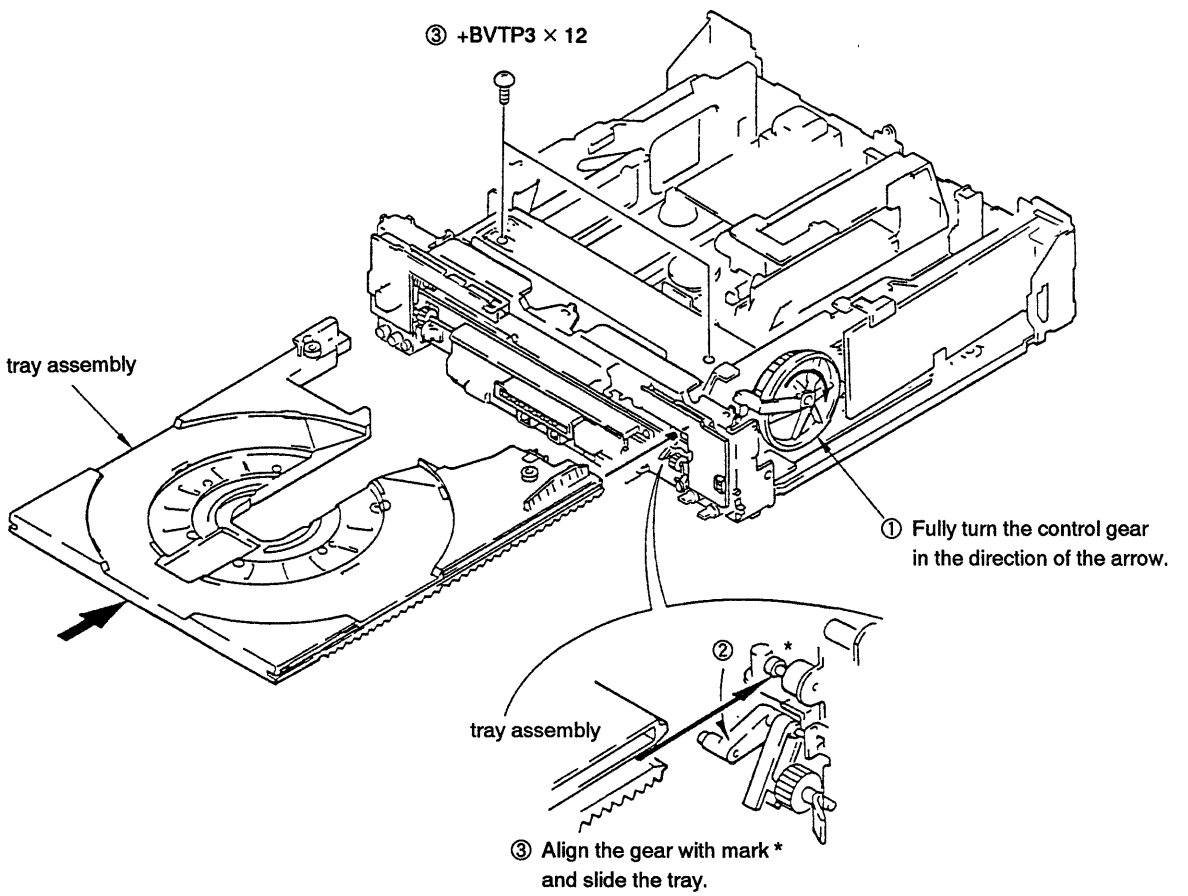

*1
④ Attach the control gear so that its left end tooth on the inner side engages the left end groove on the chuck plate gear.
Insert the loading spindle to the loading groove of the control gear while slightly moving the part marked with *1 up and down.
③ Finish to put chuck cam out backward while pusing chuck plate up.
control gear
loading spindle
② Put chuck cam out backward by pushing cuck plate up.
E2.3
S481 terminals
loading spindle
+BVTP3 × 10
⑤ Assemble bracket assembly. Take care not to damage the terminals of S481.

2-7. TRAY ASSEMBLY

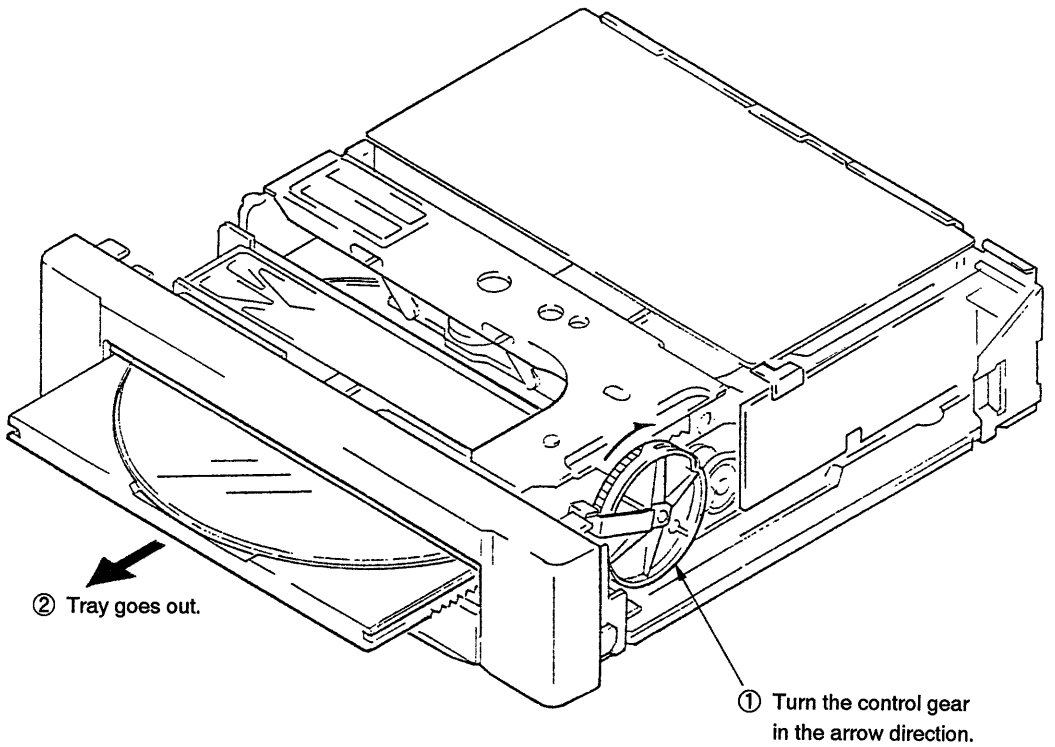
• **DISASSEMBLE**



• **ASSEMBLE**

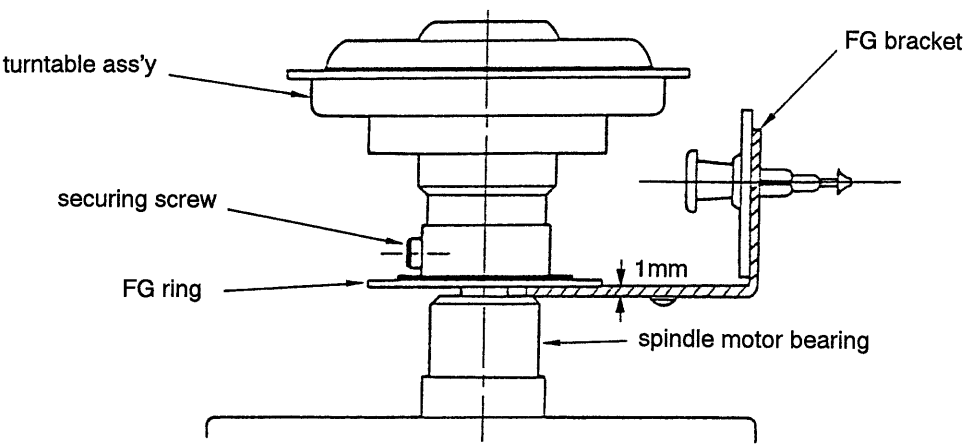

③ +BVTP3 × 12
tray assembly
① Fully turn the control gear in the direction of the arrow.
②
*
tray assembly
③ Align the gear with mark * and slide the tray.

2-8. PUTTING OUT DISC WHEN A TROUBLE HAS OCURRED WITH THE DISC LOADED



2-9. TURNTABLE ASSEMBLY HEIGHT ADJUSTMENT

1. Open the tray by turning the control gear recured on the right side of the set clockwise.
2. Remove chucking assembly. (Refer to page 2-2.)
3. Remove FG bracket with FG board.
4. Replace turntable assembly.
   Adjust turntable assembly height using FG bracket(1 mm thickness)as followings.

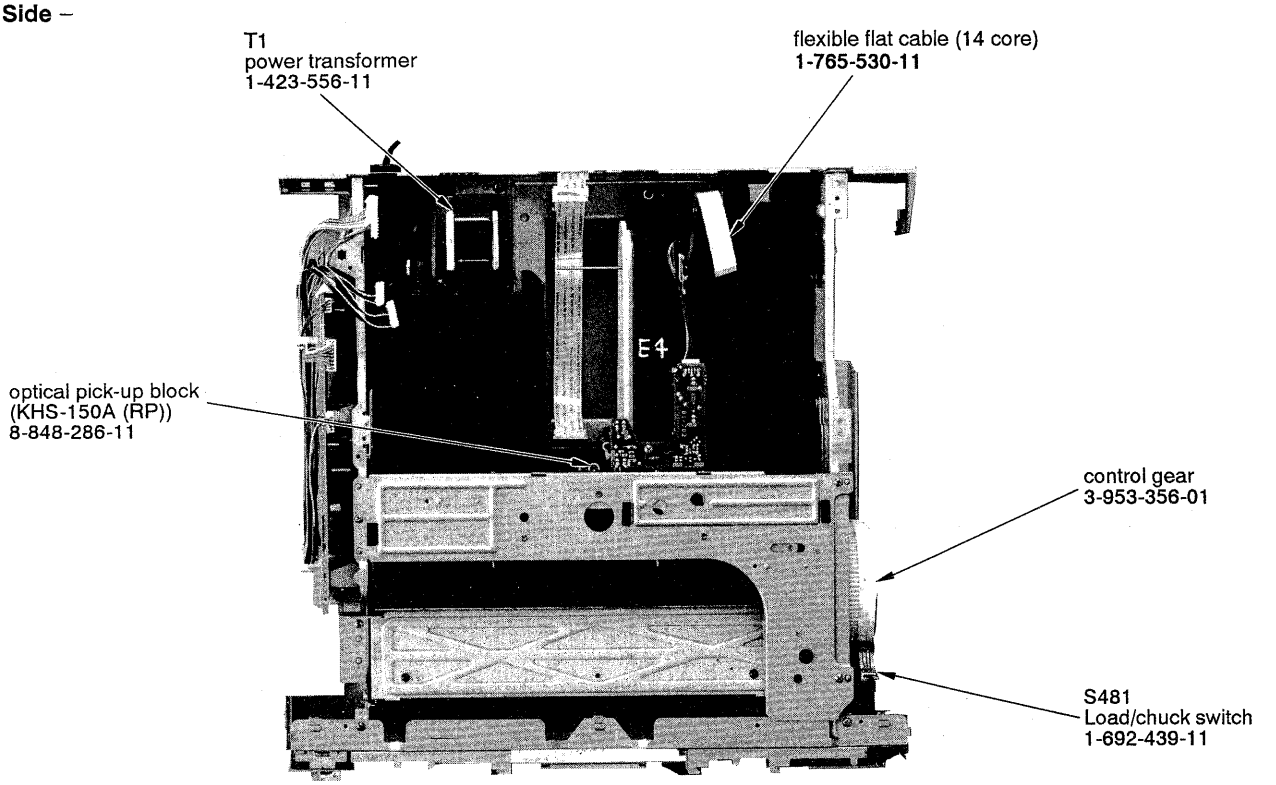


Insert FG bracket between spindle motor bearing and FG ring to set height and tighten securing screw.

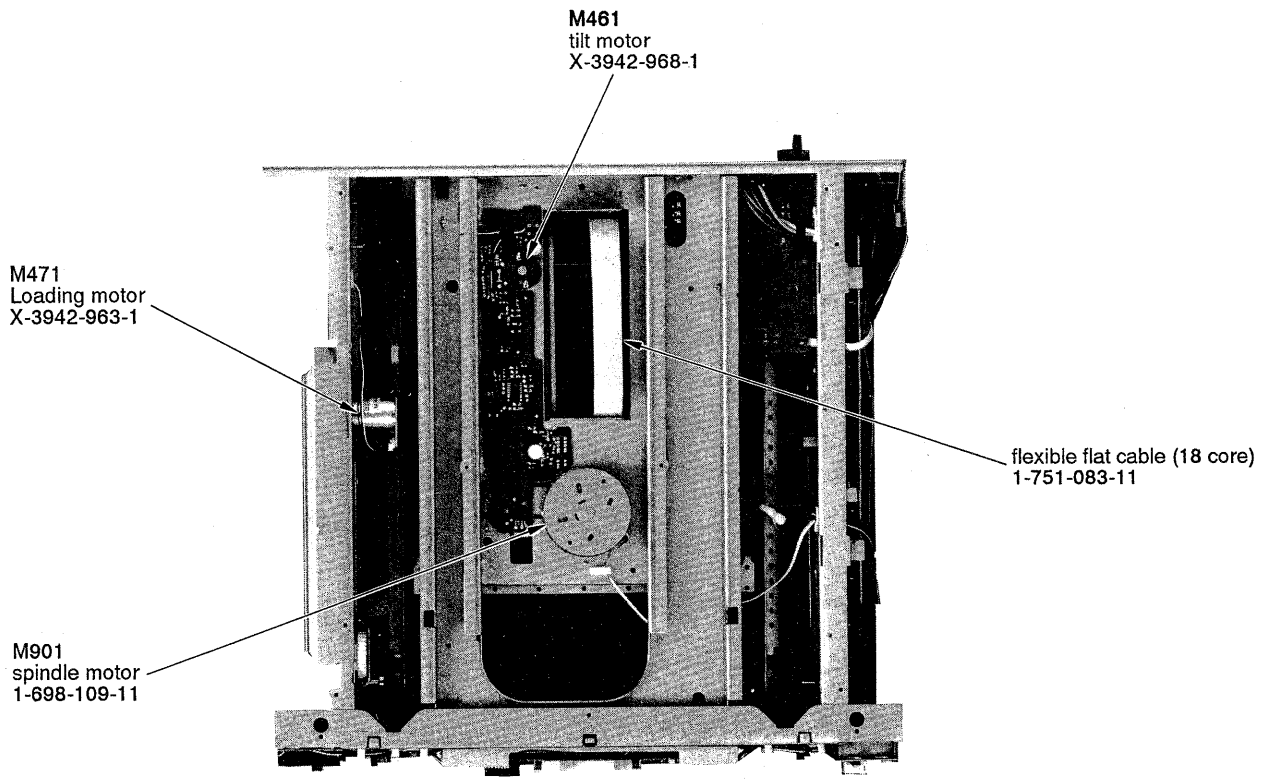
5. Fit FG bracket with FG board in its original position.

2-10. INTERNAL VIEWS

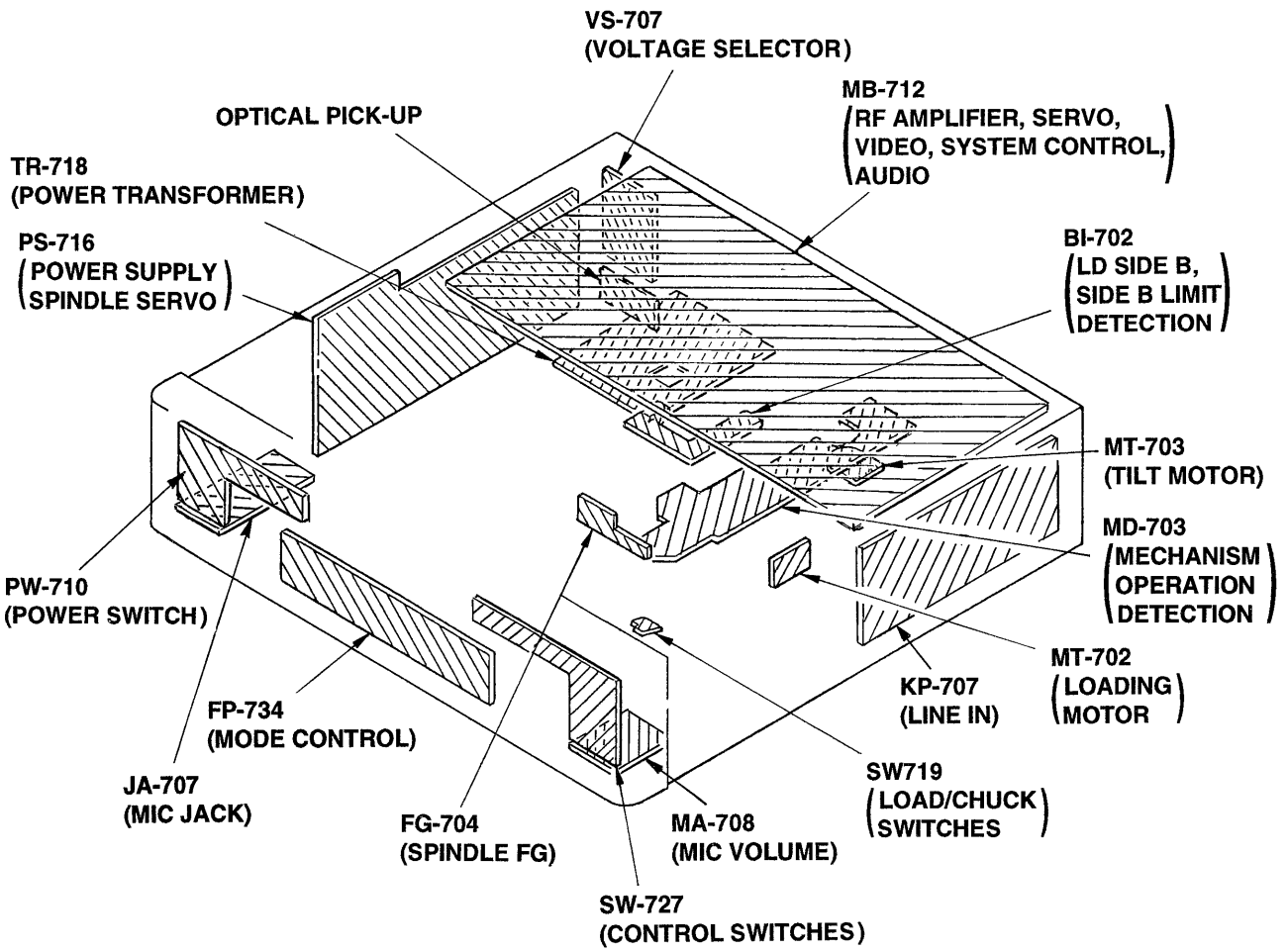
– Top Side –



– Bottom Side –

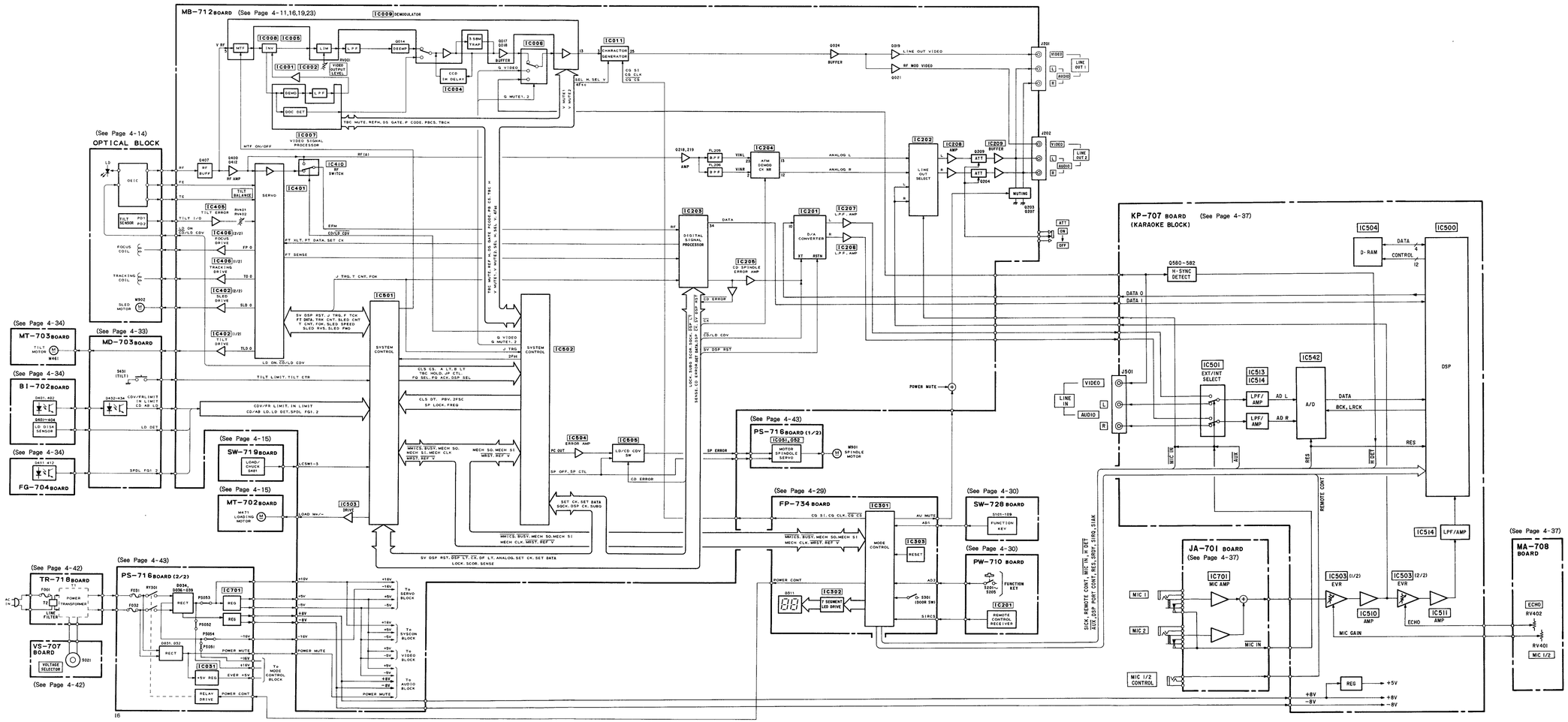


2-11. CIRCUIT BOARDS LOCATION

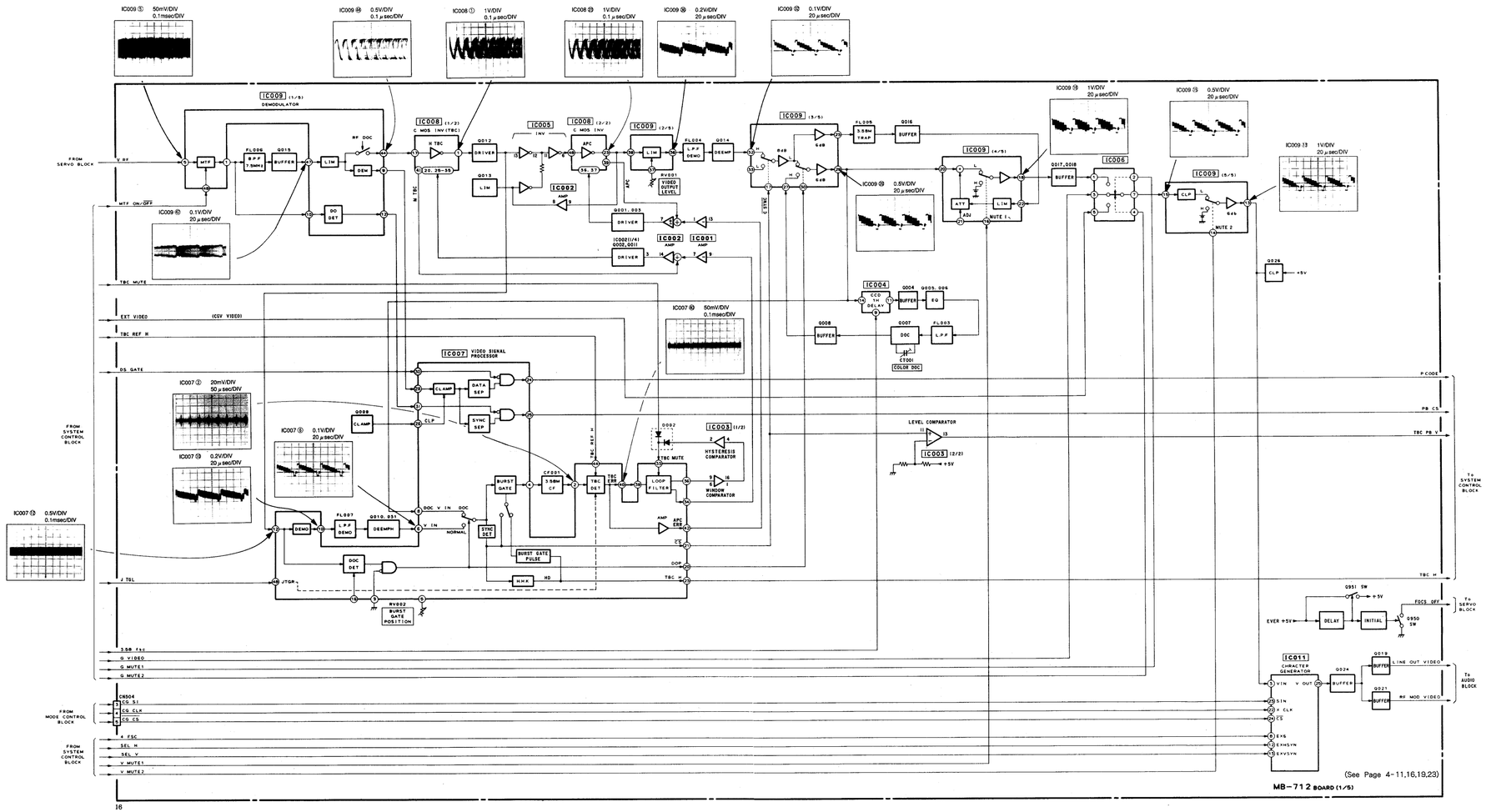


SECTION 3
DIAGRAMS

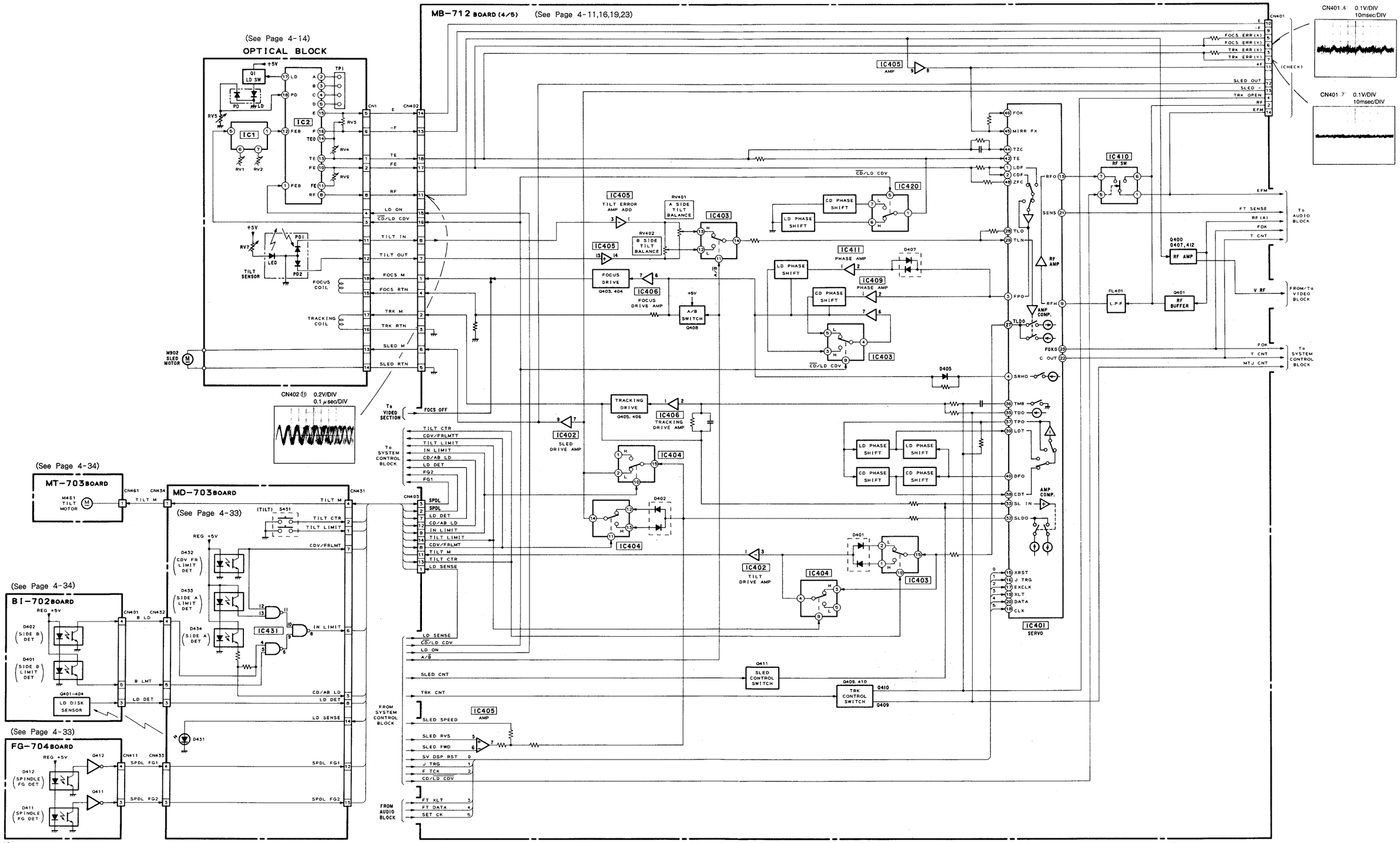
3-1. OVERALL BLOCK DIAGRAM



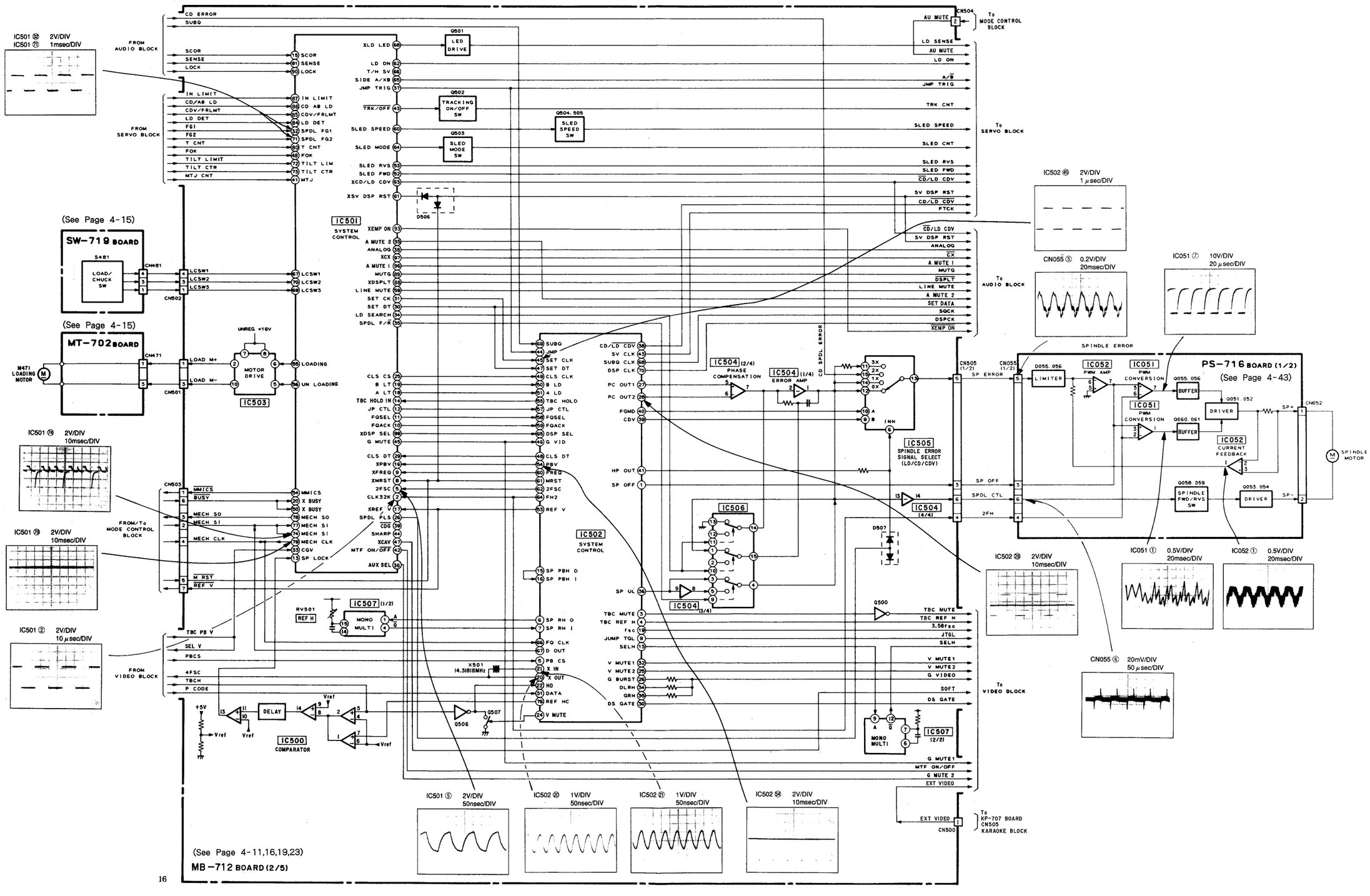
3-2. VIDEO BLOCK DIAGRAM



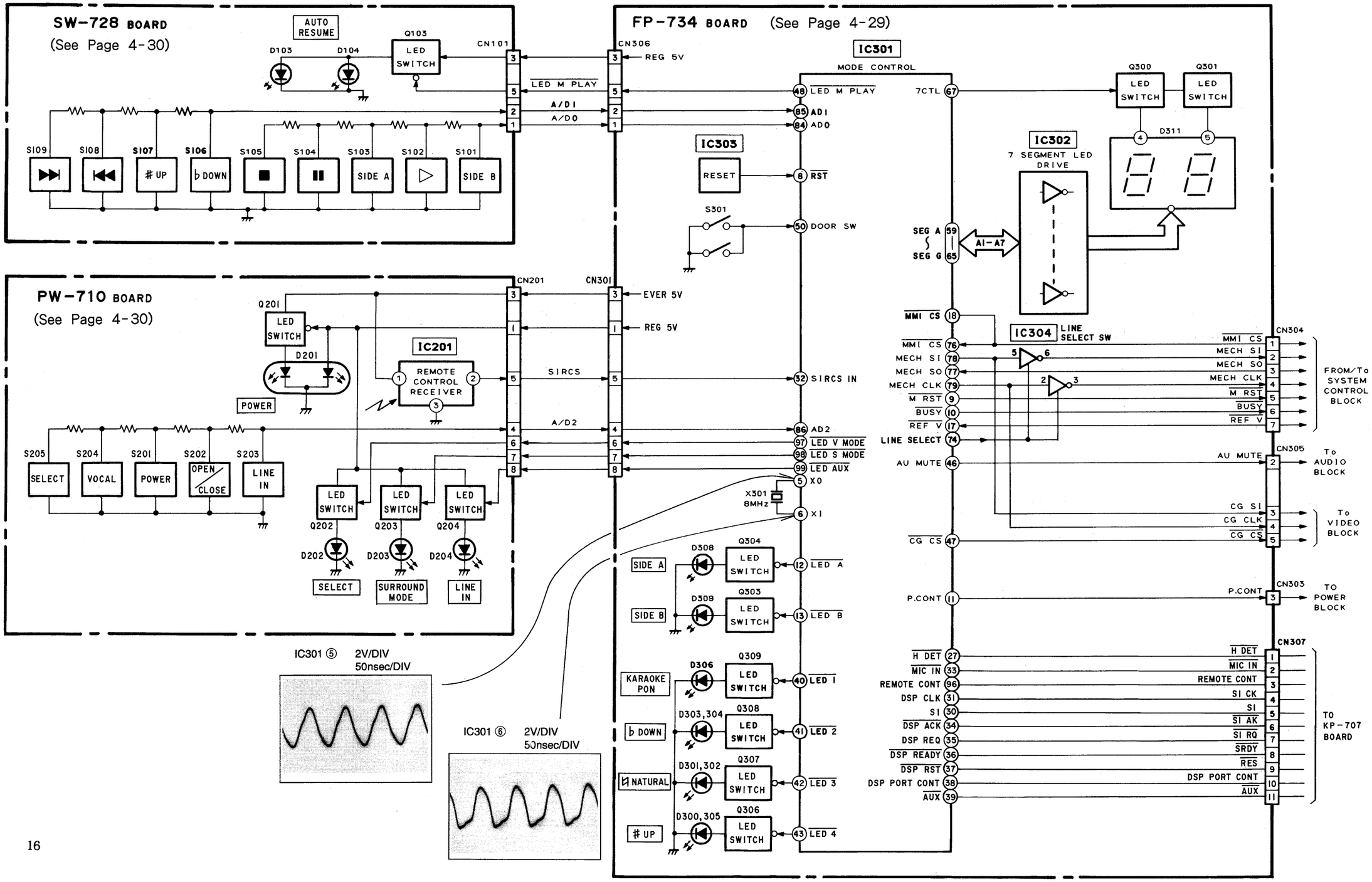
3-3. SERVO BLOCK DIAGRAM



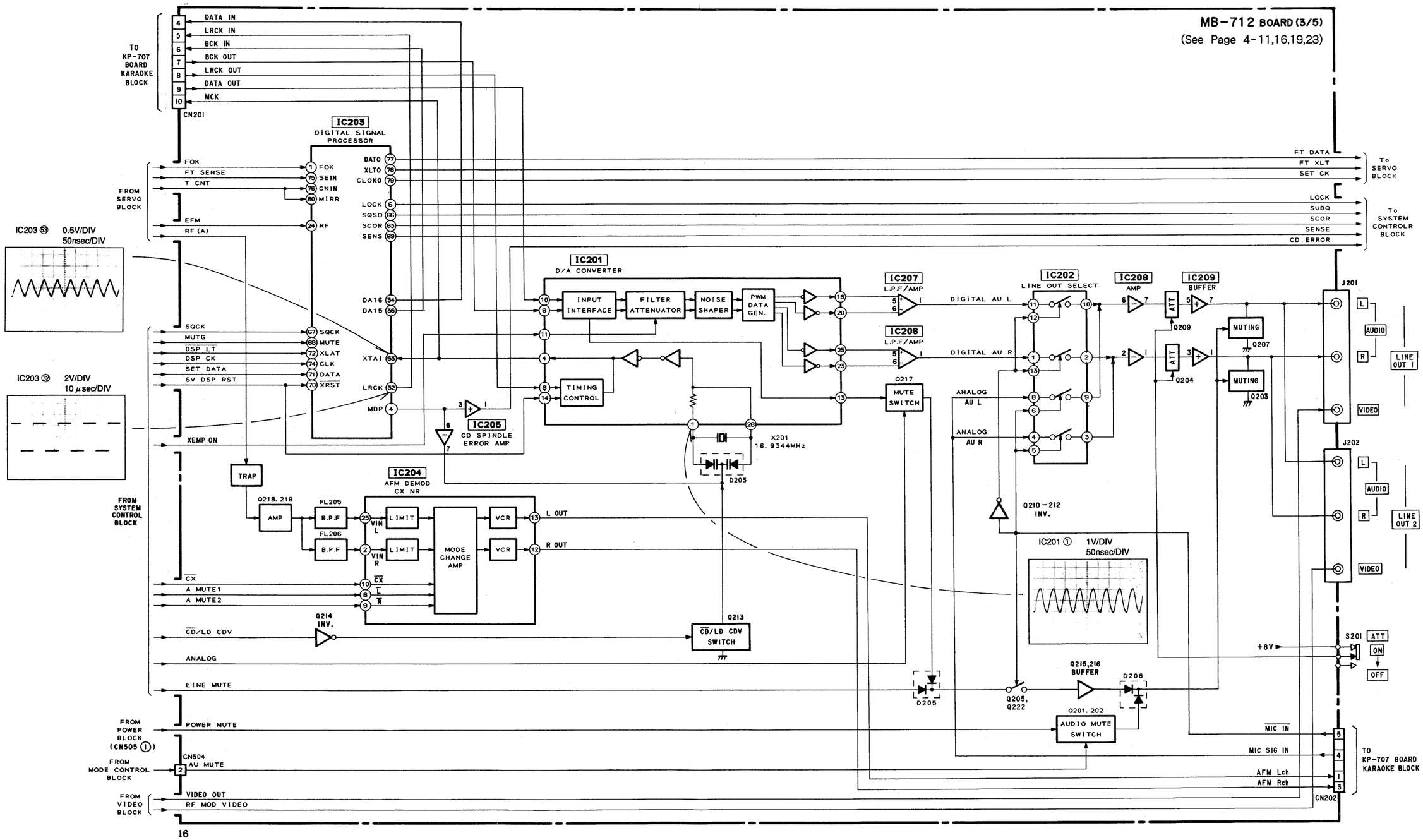
3-4. SYSTEM CONTROL BLOCK DIAGRAM



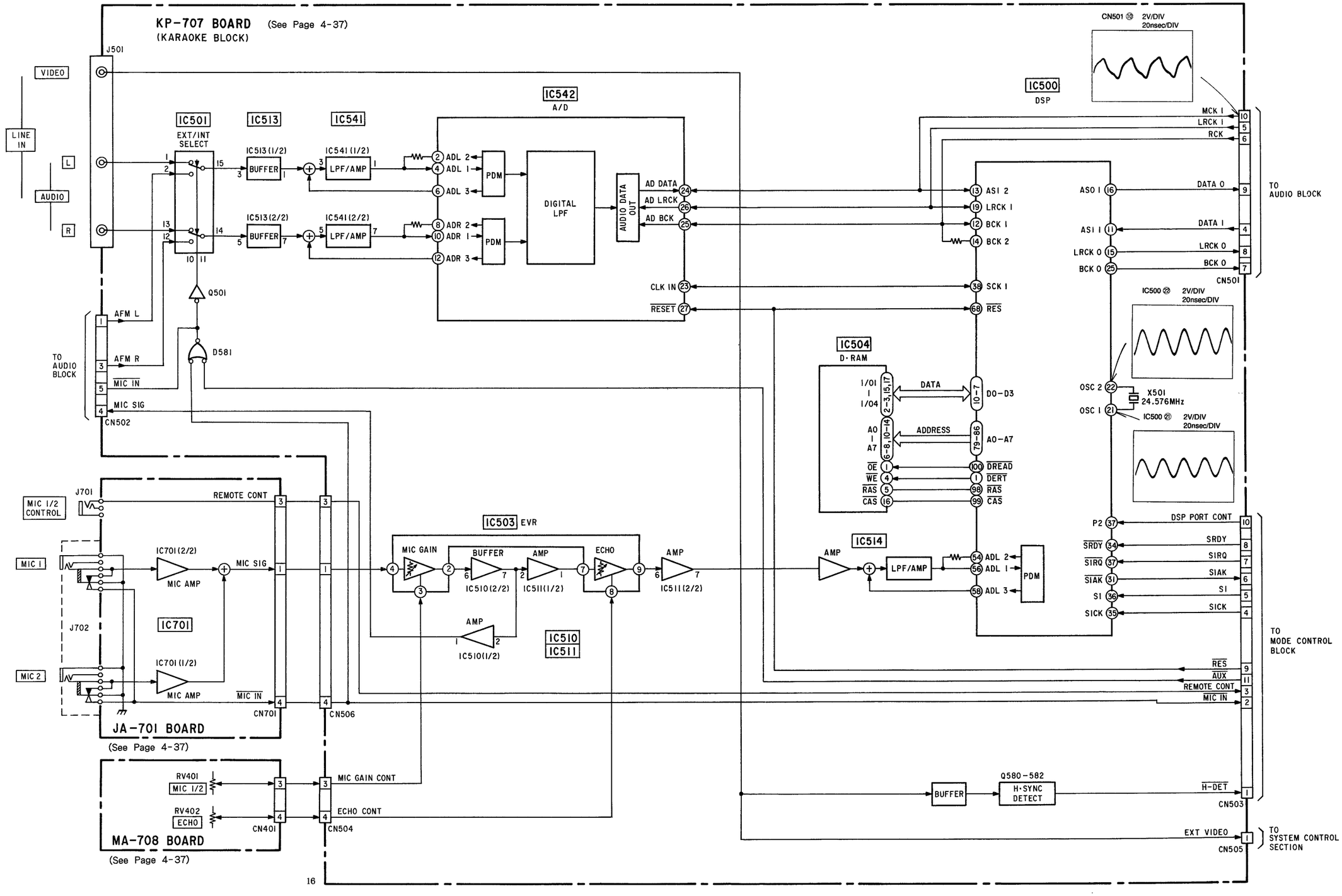
3-5. MODE CONTROL BLOCK DIAGRAM



3-6. AUDIO BLOCK DIAGRAM

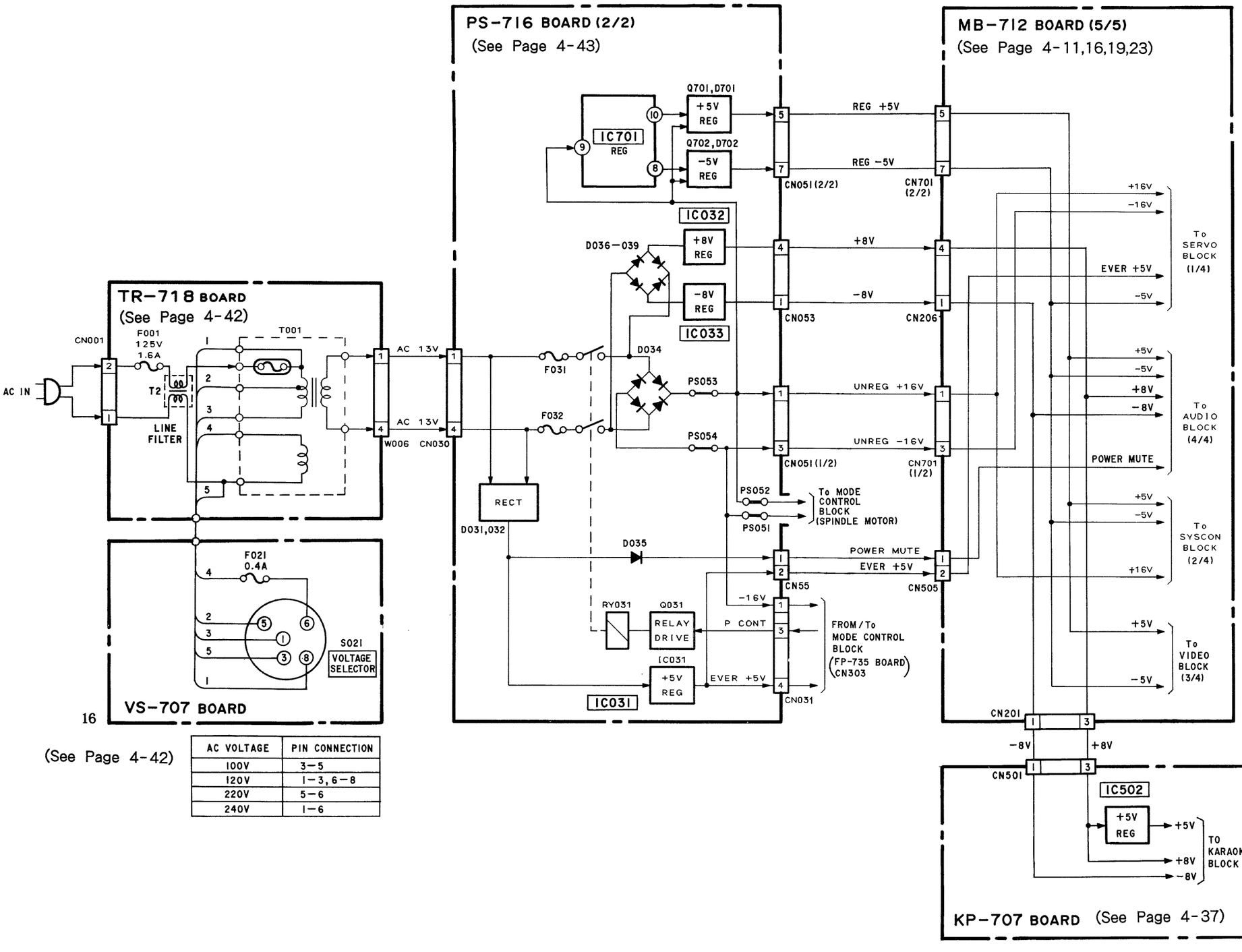


3-7. LINE IN BLOCK DIAGRAM



3-15 3-16

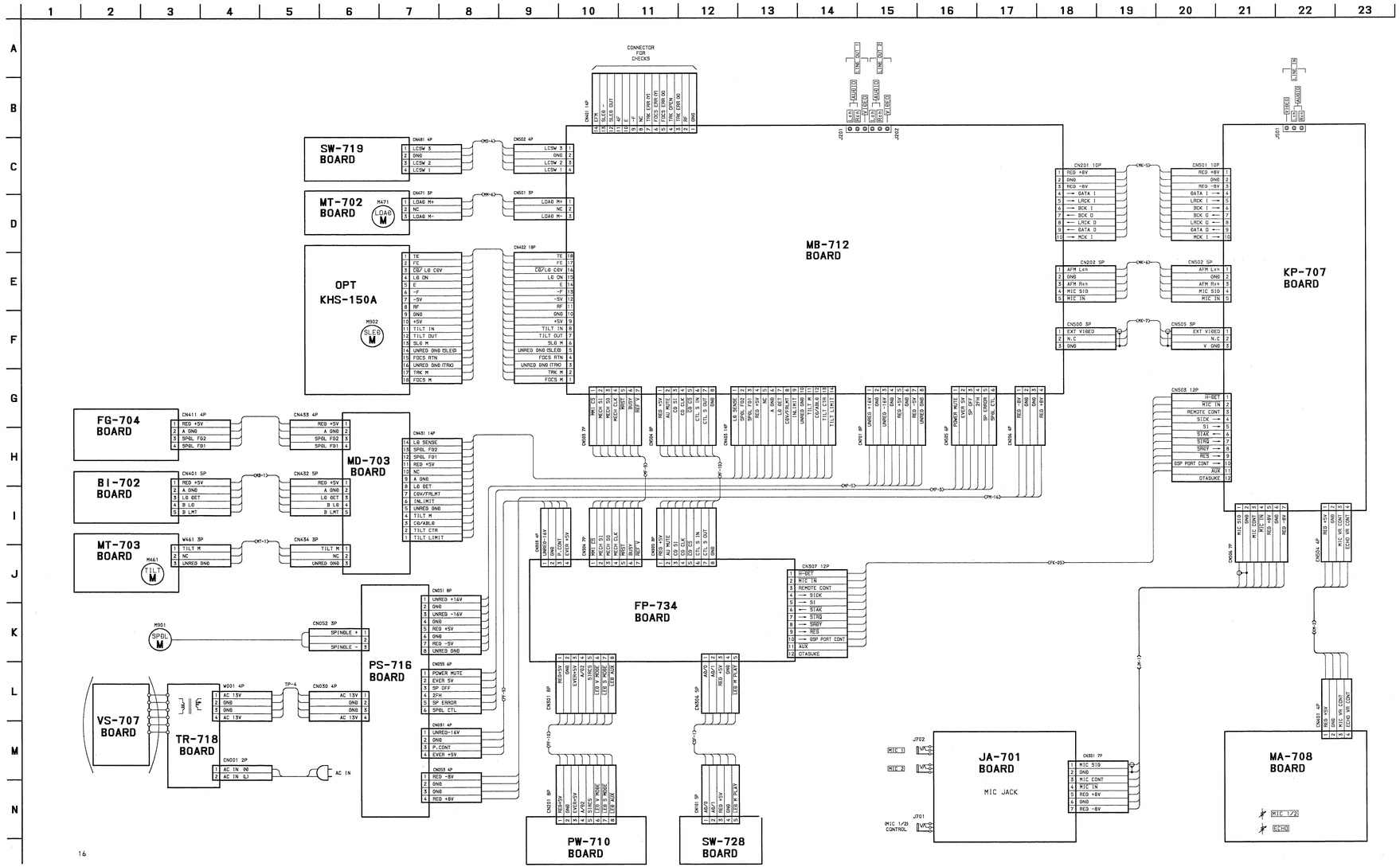
3-8. POWER SUPPLY BLOCK DIAGRAM



16

(See Page 4-42)

AC VOLTAGE	PIN CONNECTION
100V	3–5
120V	1–3, 6–8
220V	5–6
240V	1–6



4-1 4-2 4-3 4-4 4-5

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For printed wiring boards:

- ○—— : indicated a lead wire mounted on the component side.
- ●—— : indicated a lead wire mounted on the conductor side.
- ▒▒▒ : Pattern from the side which enables seeing.
- ▒▒▒ : Pattern of the rear side.

Caution :

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

For schematic diagram:

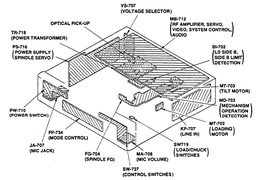
- Caution when replacing chip parts. New parts must be attached after removal of chip. Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4 W unless otherwise noted. Chip resistors: 1/10 W unless otherwise noted. k Ω : 1000 Ω , M Ω : 1000k Ω .
- All capacitors are in μF unless otherwise noted. pF: μ μF. 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⚠ : nonflammable resistor.
- ⚠ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.*
- ▬▬ : B + Line.*
- ▬ ▬ ▬ : B − Line.*
- Voltage are dc between measurement points and ground when playing back the reference disc (HLV-8) color bar segment.*
- Readings are taken with a digital multimeter (DC10 MΩ).
- Voltage variations may be noted due to normal production tolerances.
- ⇨ : IN/OUT direction of B line (+, −).*
- Circled numbers refer to waveforms.*

When indicating parts by reference number, please include the board name.

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

- * : indicated by the color red.

FRAME



MB-712 BOARD

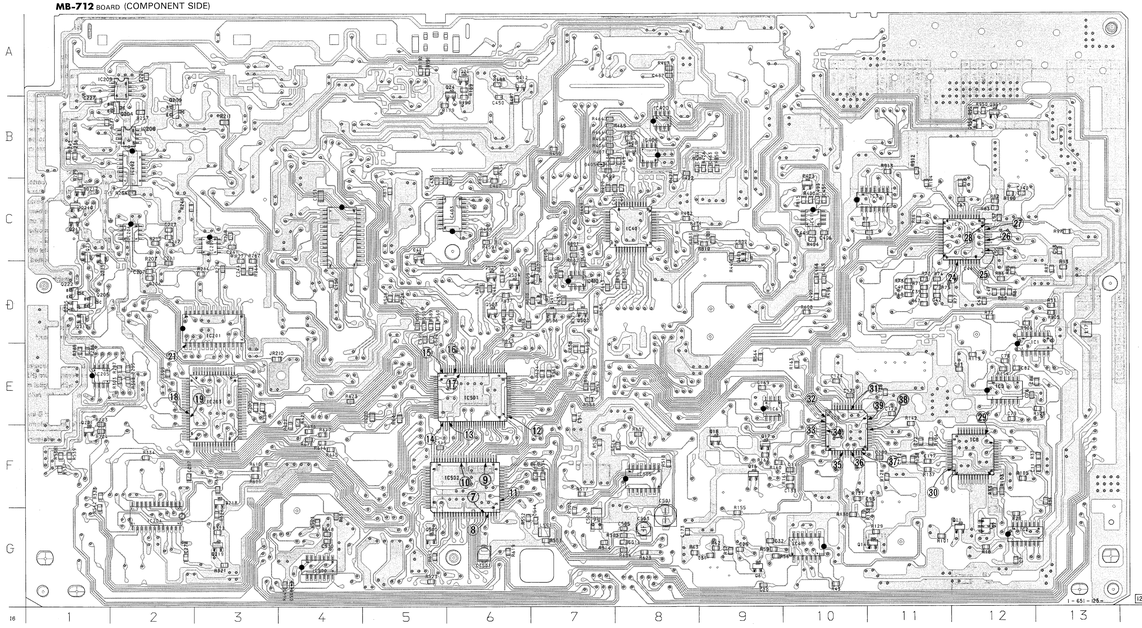
MB-712 (VIDEO, RF AMPLIFIER, SERVO, SYSTEM CONTROL, AUDIO) PRINTED WIRING BOARD

—Ref. No. MB-712 Board; 1,000 Series—

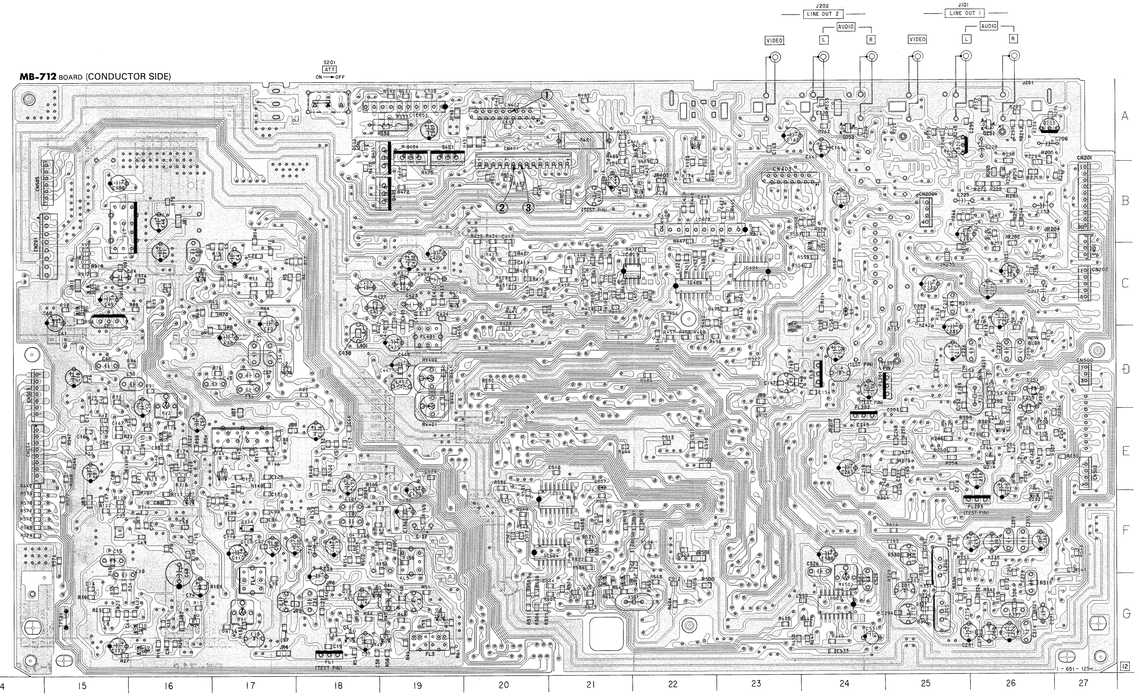
CK201	B-27	D001	G-16
CK202	C-27	D002	G-12
CK206	B-25	D003	G-16
CK401	A-20	D004	G-18
CK402	A-20	D005	G-19
CK403	B-23	D006	G-9
CK500	D-27	D007	G-19
CK501	C-27	D008	G-18
CK502	E-27	D009	G-16
CK503	D-14	D010	G-15
CK504	E-14	D011	G-12
CK505	B-15	D012	F-16
CK701	B-15	D013	E-16
		D014	E-10
CT001	G-19	D015	E-17
CT501	G-6	D016	F-9
		D017	F-9
D001	G-16	D018	F-9
D002	D-17	D019	A-22
D003	C-24	D021	A-6
D202	C-27	D024	A-6
D203	D-26	D026	D-23
D205	D-1	D031	C-15
D208	D-26	D201	E-1
D251	A-26	D202	F-26
D253	A-24	D203	A-26
D401	C-5	D204	B-2
D402	C-23	D205	D-1
D403	C-10	D206	E-24
D405	B-7	D207	A-25
D502	A-18	D209	B-3
D503	F-21	D210	C-1
D506	D-7	D211	C-1
D507	E-21	D212	C-1
D508	G-4	D213	E-26
		D214	E-26
IC001	E-12	D215	D-1
IC002	G-12	D216	C-1
IC003	C-11	D217	D-1
IC004	E-10	D218	F-3
IC005	E-12	D219	G-3
IC006	E-9	D222	D-1
IC007	C-12	D400	A-22
IC008	F-12	D401	C-9
IC009	E-10	D403	A-19
IC011	E-4	D404	A-19
IC201	D-3	D405	B-19
IC202	B-2	D406	A-19
IC203	E-3	D407	B-22
IC204	E-2	D408	B-8
IC205	E-1	D409	D-6
IC206	C-2	D410	D-7
IC207	C-3	D411	C-19
IC208	B-2	D412	A-5
IC209	B-2	D500	G-5
IC401	C-8	D501	G-24
IC402	B-22	D502	D-7
IC403	C-6	D503	D-6
IC404	D-23	D504	D-6
IC405	C-22	D505	D-6
IC406	B-8	D506	G-21
IC409	C-21	D507	G-22
IC410	D-7	D950	B-12
IC411	C-10	D951	B-12
IC420	B-8		
IC500	C-4	RV001	G-17
IC501	E-6	RV002	D-16
IC502	F-6	RV401	E-19
IC503	A-19	RV402	D-19
IC504	F-21	RV501	G-24
IC505	F-8		
IC506	F-21		
IC507	G-24		

• ○ : Through hole.

MB-712 BOARD (COMPONENT SIDE)



MB-712 BOARD (CONDUCTOR SIDE)



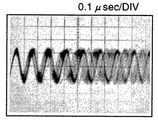
VIDEO

MB-712 (RF AMPLIFIER, SERVO) SCHEMATIC DIAGRAM

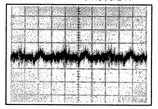
—Ref. No. MB-712 Board; 1,000 Series—

MB-712 BOARD

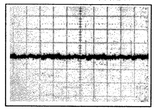
❶ CN402 ⑪ 0.2V/DIV 0.1 μsec/DIV



❷ CN401 ⑥ 0.1V/DIV 10msec/DIV



❸ CN401 ⑦ 0.1V/DIV 10msec/DIV



MB-712 BOARD (1/4)

[SERVO SECTION]

IC420 TRACKING ERROR AMP

IC406 TRACKING/FOCUS DRIVE AMP

IC405 TILT ERROR AMP ADD

IC401 SERVO

IC401 CXA1820Q

IC402 SLED DRIVE AMP

IC403 SWITCH

IC404 SWITCH

IC411 PHASE AMP

IC409 PHASE AMP

IC410 RF SW

Q401 2SA1162 RF BUFFER

Q407 BUFFER

Q408, 412 RF AMP

Q405, 404 FOCUS DRIVE

Q405, 406 TRACKING DRIVE

Q410 TRK CONTROL SWITCH

Q411 SLED CONTROL SWITCH

RV401 SIDE A TILT BALANCE

RV402 SIDE B TILT BALANCE

CN401 14P

CN402 18P

CN403 14P

CN1

CONNECTOR FOR CHECKS

TO (3/4) (See Page 4-20)

TO (3/4) (See Page 4-21)

TO (4/4) (See Page 4-23)

TO (3/4) (See Page 4-20)

TO (4/4) (See Page 4-23)

TO (2/4) (See Page 4-17)

Ⓩ TO MD-703 BOARD CN431 (See Page 4-34)

TO (2/4) (See Page 4-16)

⚠ OPTICAL DEVICE KHS-150A

IC1

IC2 DEIC

LD SWITCH Q1

TRACKING COIL

FOCUS COIL

TILT SENSOR

SLED M902

● IC401 CXA1632Q

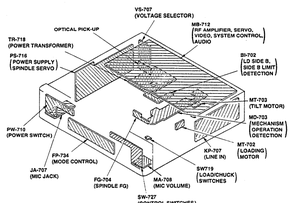
● SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB				

Spindle phase servo	
Spindle servo (Speed and phase)	
Tracking servo	
Sled servo	
Focus servo	
Skew servo	

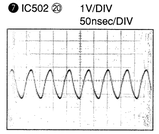
MB-712 (SYSTEM CONTROL), MT-702 (LOADING MOTOR), SW-719 (LOAD/CHUCK SWITCHES) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS • For the printed wiring diagram of the MB-712 board, refer to page 4-6.

—Ref. No. MB-712 Board; 1,000 Series, MT-702 and SW-719 Boards; 4,000 Series—

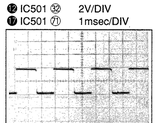


MB-712 BOARD

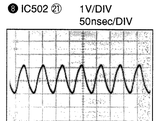
❼ IC502 ㉓ 1V/DIV 50nsec/DIV



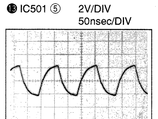
⓬ IC501 ㉜ 2V/DIV
⓱ IC501 ㉑ 1msec/DIV



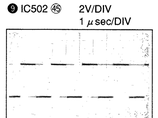
❽ IC502 ㉑ 1V/DIV 50nsec/DIV



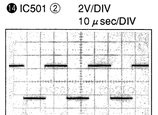
⓭ IC501 ⑤ 2V/DIV 50nsec/DIV



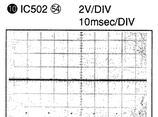
❾ IC502 ㊺ 2V/DIV 1 μsec/DIV



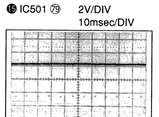
⓮ IC501 ② 2V/DIV 10 μsec/DIV



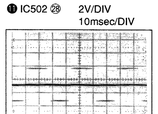
❿ IC502 ㊹ 2V/DIV 10msec/DIV



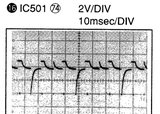
⓯ IC501 ㉙ 2V/DIV 10msec/DIV

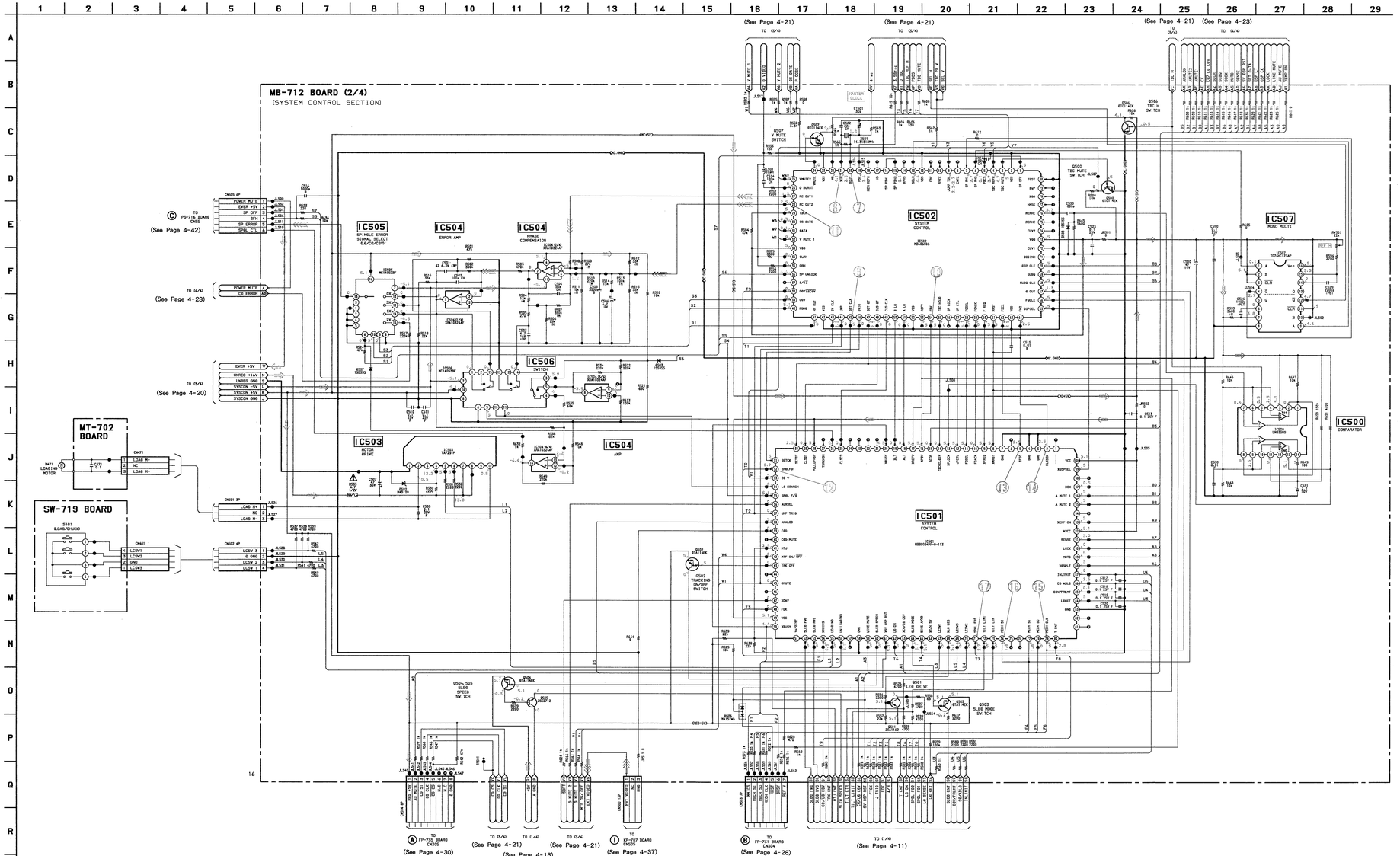


⓫ IC502 ㉘ 2V/DIV 10msec/DIV

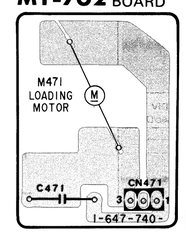


⓰ IC501 ㉔ 2V/DIV 10msec/DIV

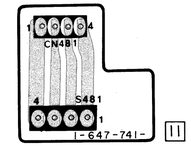




MT-702 BOARD



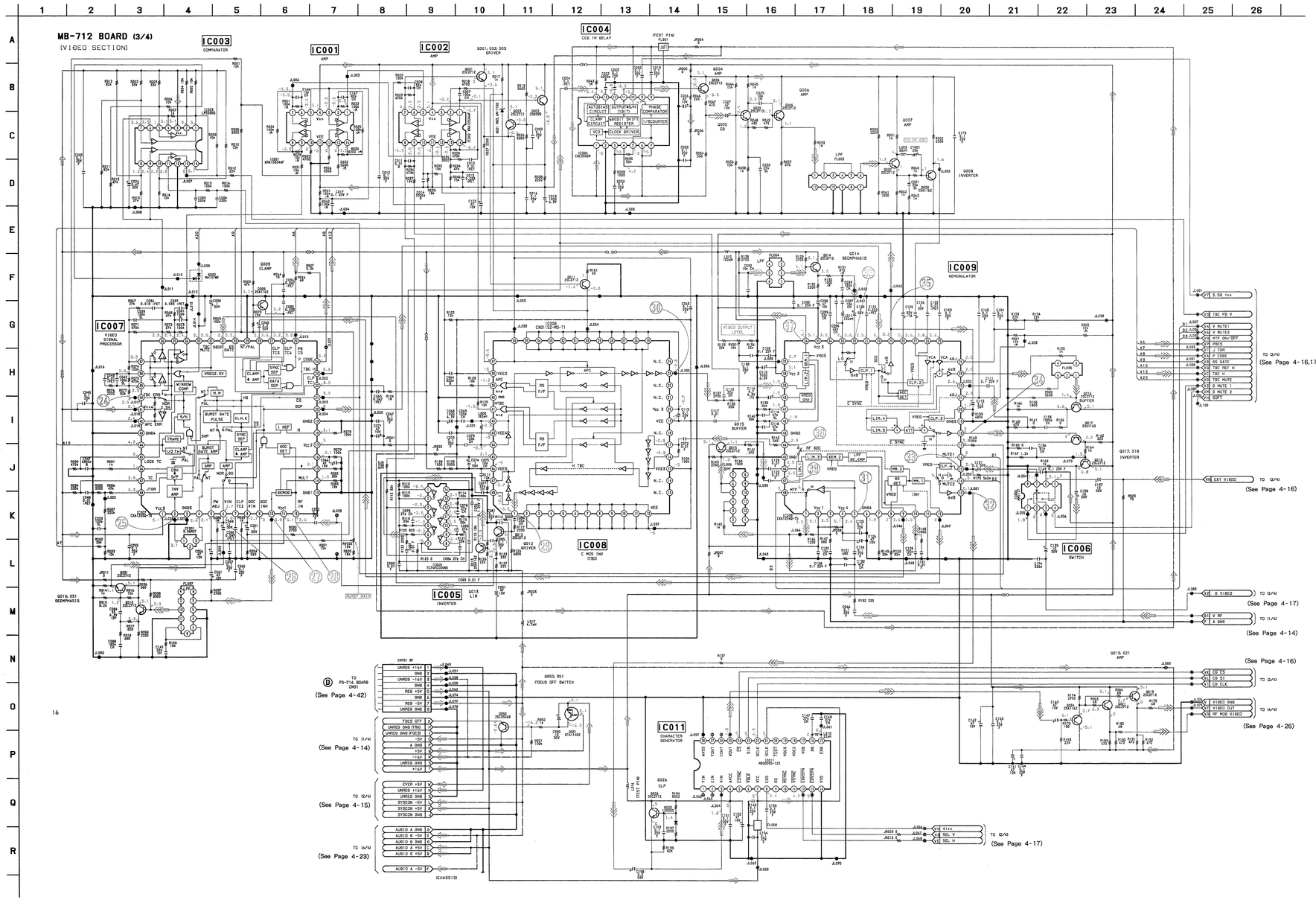
SW-719 BOARD



• SIGNAL PATH

Spindle phase servo	
Spindle servo (Speed and phase)	
Tracking servo	
Sled servo	

MB-712 (VIDEO) SCHEMATIC DIAGRAM • For the printed wiring diagram of the MB-712 board, refer to page 4-6.
—Ref. No. MB-712 Board; 1,000 Series—



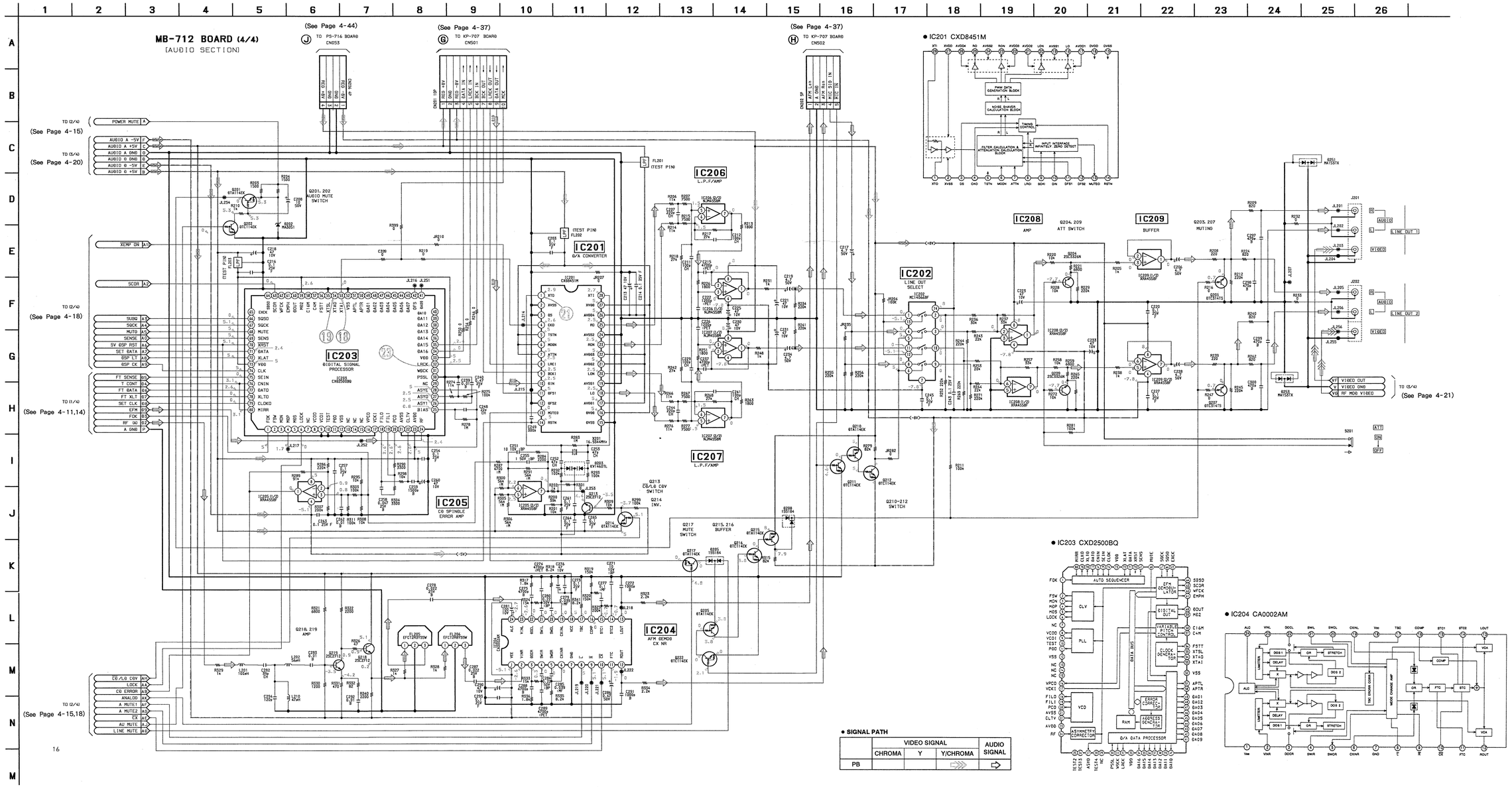
MB-712 BOARD

① IC008 ①	1V/DIV, 0.1 μsec/DIV	
② IC007 ②	20mV/DIV, 50 μsec/DIV	
③ IC009 ③	50mV/DIV, 0.1msec/DIV	
④ IC009 ④	50mV/DIV, 0.1msec/DIV	
⑤ IC009 ⑤	50mV/DIV, 0.1msec/DIV	
⑥ IC007 ⑥	0.1V/DIV, 20 μsec/DIV	
⑦ IC009 ⑦	0.1V/DIV, 20 μsec/DIV	
⑧ IC007 ⑧	0.5V/DIV, 0.1msec/DIV	
⑨ IC009 ⑨	0.5V/DIV, 0.1msec/DIV	
⑩ IC007 ⑩	0.2V/DIV, 20 μsec/DIV	
⑪ IC009 ⑪	1V/DIV, 20 μsec/DIV	
⑫ IC007 ⑫	0.5V/DIV, 0.1msec/DIV	
⑬ IC009 ⑬	1V/DIV, 20 μsec/DIV	
⑭ IC009 ⑭	0.5V/DIV, 0.1 μsec/DIV	
⑮ IC009 ⑮	0.5V/DIV, 20 μsec/DIV	
⑯ IC009 ⑯	0.5V/DIV, 20 μsec/DIV	
⑰ IC009 ⑰	0.2V/DIV, 20 μsec/DIV	
⑱ IC009 ⑱	1V/DIV, 20 μsec/DIV	
⑲ IC009 ⑲	0.1V/DIV, 20 μsec/DIV	
⑳ IC009 ⑳	0.1V/DIV, 20 μsec/DIV	
㉑ IC009 ㉑	0.1V/DIV, 20 μsec/DIV	

• **SIGNAL PATH**

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
PB			⇨

MB-712 (AUDIO) SCHEMATIC DIAGRAM • For the printed wiring diagram of the MB-712 board, refer to page 4-6.
—Ref. No. MB-712 Board; 1,000 Series—



● IC201 CXD8451M

● IC203 CXD2500BQ

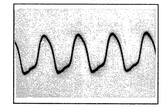
● IC204 CA0002AM

● SIGNAL PATH

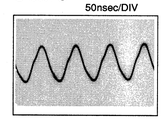
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB				⇨

FP-734 BOARD

❶ IC301 ⑥ 2V/DIV 50nsec/DIV

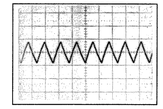


❷ IC301 ⑤ 2V/DIV 50nsec/DIV

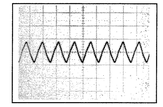


MB-712 BOARD

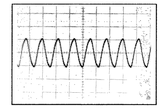
⓯ IC203 ㊸ 0.5V/DIV 50nsec/DIV



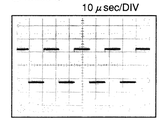
⓰ IC203 ㊹ 1V/DIV 50nsec/DIV



❶ IC201 ① 1V/DIV 50nsec/DIV



❷ IC203 ㉜ 2V/DIV 10 μsec/DIV



FP-734 (MODE CONTROL), PW-710 (POWER SWITCH), SW-728 (CONTROL SWITCHES) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

—Ref. No. FP-734 Board; 3,000 Series, PW-710 and SW-728 Boards; 7,000 Series—

FP-734 BOARD

CN301 B-10
CN303 B-8
CN304 B-9
CN305 B-1
CN306 B-1
CN307 B-7

D300 A-4
D301 A-5
D302 A-5
D303 A-5
D304 A-6
D305 A-4
D306 A-7
D307 E-2
D308 A-6
D309 A-4
D311 A-3

IC301 D-3
IC302 B-5
IC303 D-2
IC304 D-1

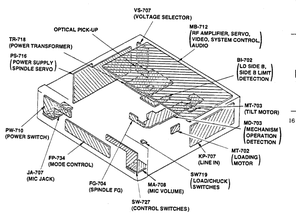
Q300 D-9
Q301 C-9
Q303 B-5
Q304 B-6
Q306 A-5
Q307 A-6
Q308 A-6
Q309 A-7

SW-728 BOARD

PW-710 BOARD

FP-734 BOARD (CONDUCTOR SIDE)

FP-734 BOARD (COMPONENT SIDE)



• ○ : Through hole is omitted.

FP-734 BOARD

IC304 LINE SELECT SWITCH

IC303 RESET

IC301 MODE CONTROL

IC302 7-SEGMENT LED DRIVE

SW-728 BOARD

PW-710 BOARD

IC201 REMOTE CONTROL RECEIVER

TO MB-712 BOARD SYSTEM CONTROL SECTION CN503 (See Page 4-17)

TO KB-714 BOARD CN503 (See Page 4-42)

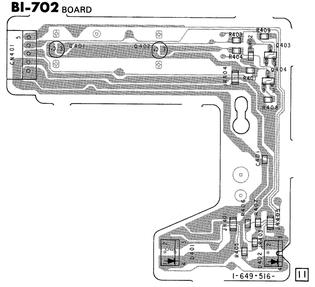
TO KP-727 BOARD CN503 (See Page 4-37)

TO MB-712 BOARD SYSTEM CONTROL SECTION CN504 (See Page 4-16)

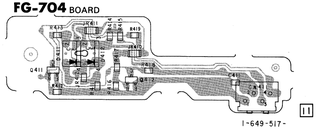
BI-702 (LD SIDE B, LIMIT DETECTION), FG-704 (SPINDLE FG), MD-703 (MECHANISM OPERATION DETECTION), MT-703 (TILT MOTOR) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

—Ref. No. BI-702, FG-704, MD-703 and MT-703 Boards; 2,000 Series—

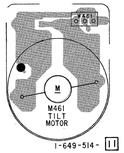
BI-702 BOARD



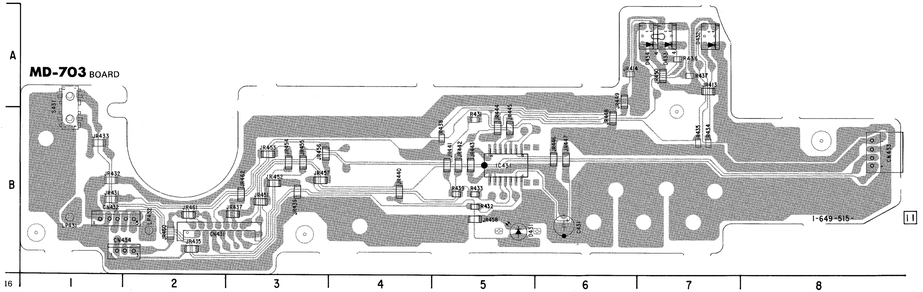
FG-704 BOARD

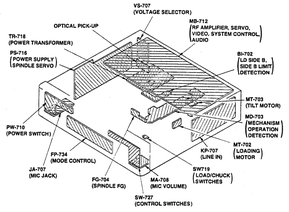


MT-703 BOARD



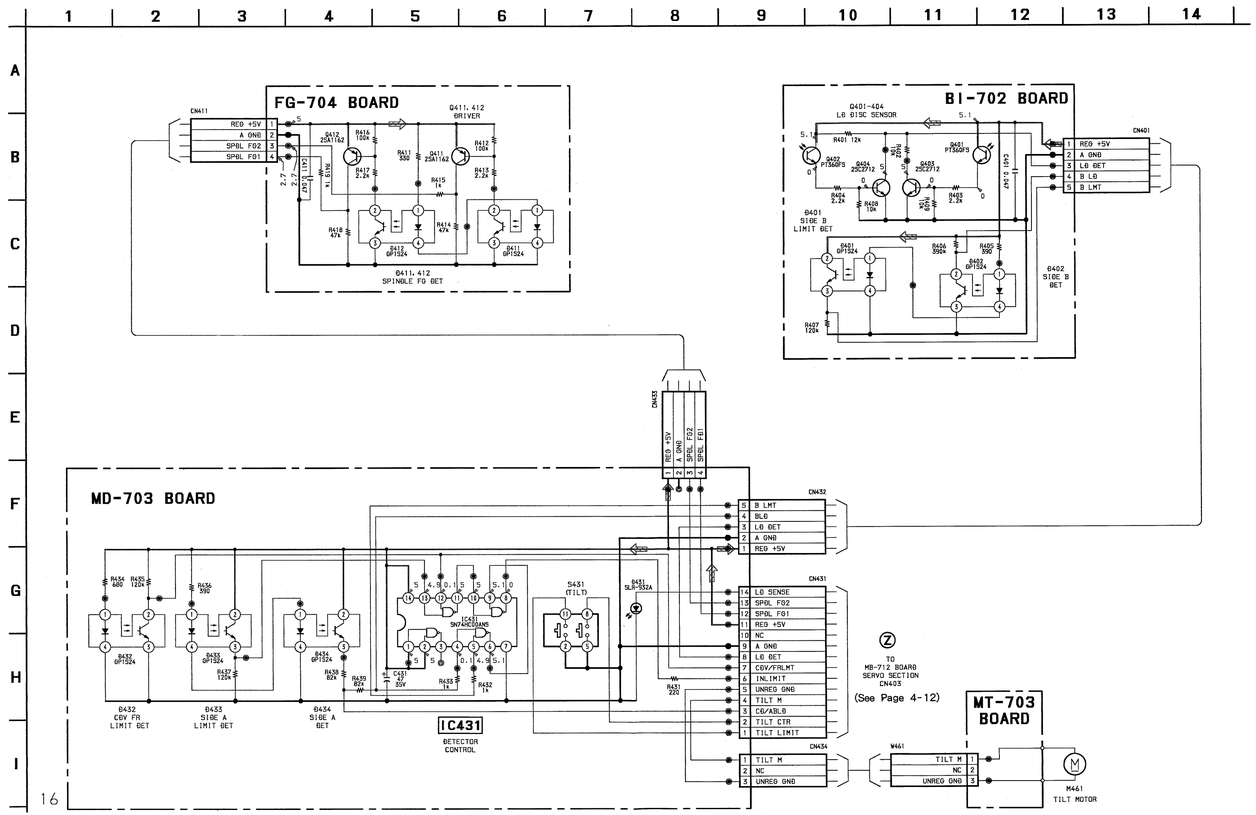
MD-703 BOARD





MD-703 BOARD

CN431	B-2
CN432	B-1
CN433	B-8
CN434	B-1
D431	B-5
D432	A-7
D433	A-7
D434	A-7
IC431	B-5

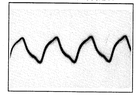


KP-707 (LINE IN), MA-708 (MIC VOLUME), JA-707 (MIC JACK) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

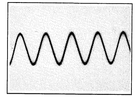
—Ref. No. KP-707 Board; 8,000 Series, MA-708 Board; 10,000 Series, JA-707 Board; 11,000 Series—

KP-707 BOARD

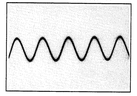
❶ CN501 ⑯ 2V/DIV 20nsec/DIV



❷ IC500 ㉒ 2V/DIV 20nsec/DIV



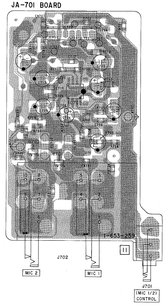
❸ IC500 ㉑ 2V/DIV 20nsec/DIV



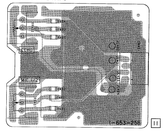
KP-707 BOARD

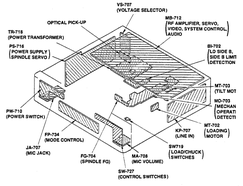
CN501	A-4
CN502	A-2
CN503	A-8
CN504	A-7
CN505	A-7
CN506	A-5
D501	A-2
D502	C-6
D503	C-6
D504	B-7
D505	B-7
D521	A-3
D522	B-3
D580	A-10
D581	A-3
IC500	H-3
IC501	B-2
IC502	B-4
IC503	B-7
IC504	C-10
IC510	B-5
IC511	B-5
IC513	C-1
IC514	C-7
IC541	C-3
IC542	D-5
Q501	B-3
Q580	A-11
Q581	B-11
Q582	A-9

JA-701 BOARD



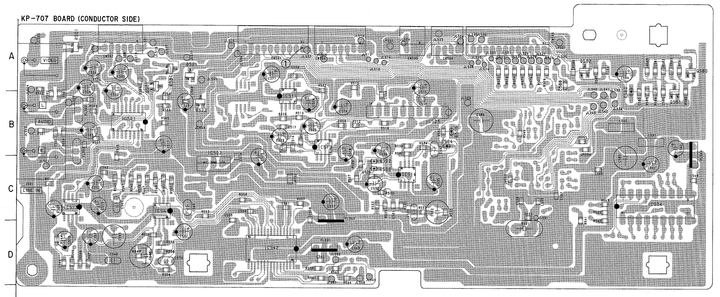
MA-708 BOARD



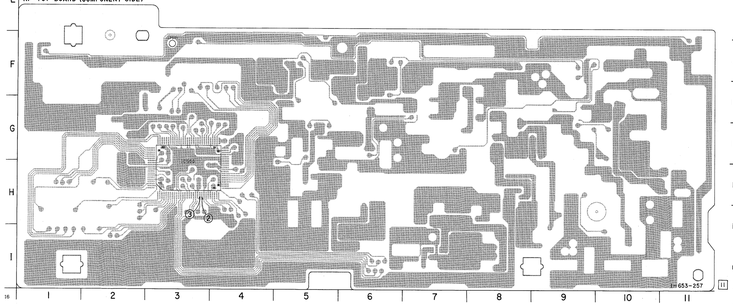


4-35

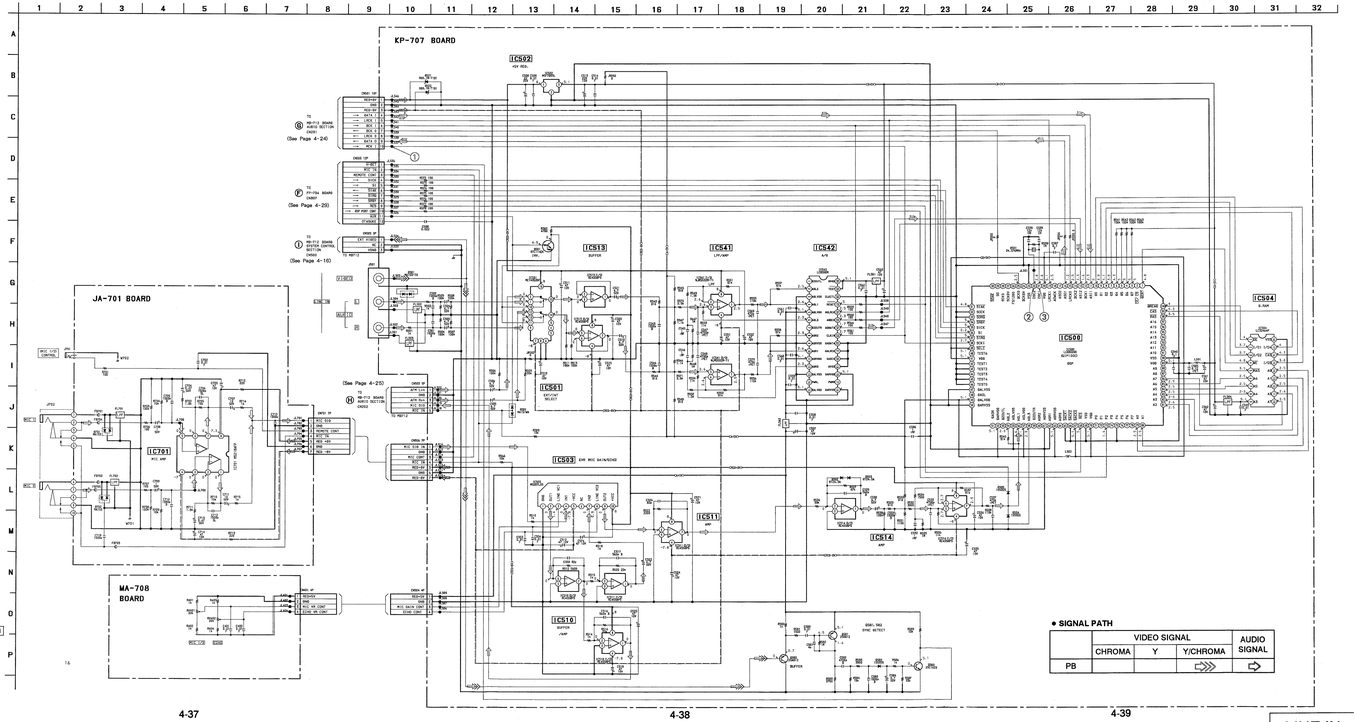
KP-707 BOARD (CONDUCTOR SIDE)



KP-707 BOARD (COMPONENT SIDE)



4-36



4-37

4-38

4-39

● SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB			⋙	⇨

LINE IN

PS-716 (POWER SUPPLY, SPINDLE SERVO), TR-718 (POWER TRANSFORMER), VS-707 (VOLTAGE SELECTOR) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

—Ref. No. PS-716 Board; 6,000Series, TR-718 Board; 5,000 Series, VS-707 Board; 9,000 Series —

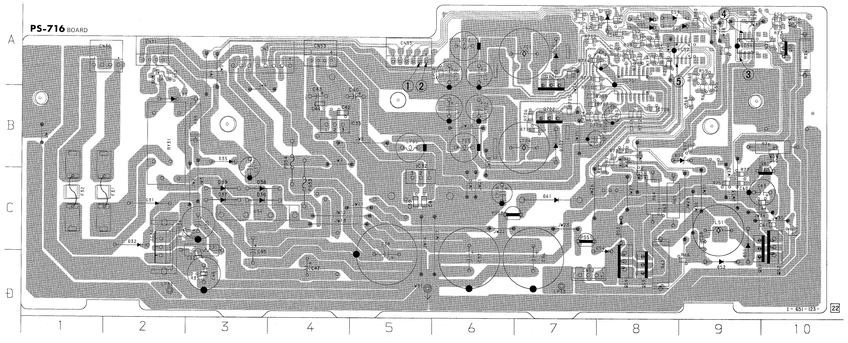
PS-716 BOARD

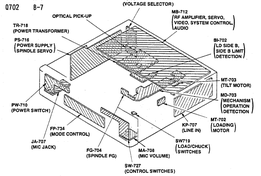
CN030 A-1
CN031 A-2
CN051 A-3
CN052 D-7
CN053 A-4
CN055 A-5

D031 C-2
D032 C-2
D033 B-2
D034 C-3
D035 B-3
D036 C-3
D037 C-3
D038 C-3
D039 C-3
D051 C-9
D052 D-9
D053 C-8
D054 C-8
D055 A-8
D056 A-8
D057 A-8
D058 B-9
D059 A-8
D060 A-8
D061 C-7
D701 A-7
D702 B-7

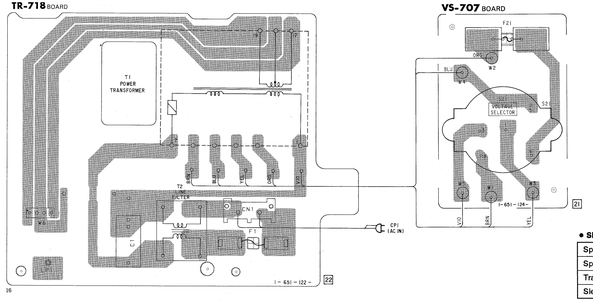
IC031 C-2
IC032 C-5
IC033 B-4
IC051 A-9
IC052 A-9
IC701 A-8

Q031 A-2
Q051 D-9
Q052 D-10
Q053 D-8
Q054 D-8
Q055 A-10
Q056 A-10
Q058 C-8
Q059 B-8
Q060 B-10
Q061 B-10
Q701 A-7
Q702 B-7





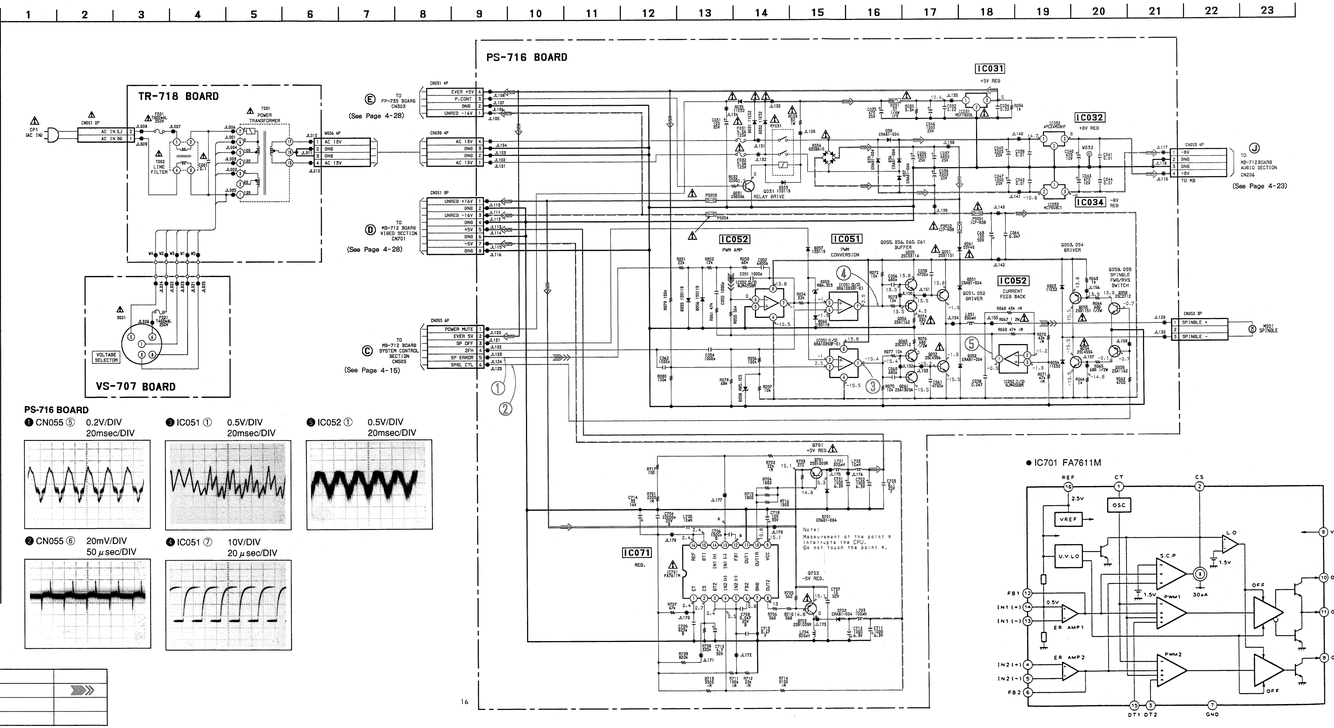
TR-718 BOARD



VS-707 BOARD

● SIGNAL PATH

Spindle phase servo	
Spindle servo (Speed and phase)	⋙
Tracking servo	
Sled servo	



PS-716 BOARD

❶ CN055 ⑤ 0.2V/DIV 20msec/DIV

❷ IC051 ① 0.5V/DIV 20msec/DIV

❸ IC052 ① 0.5V/DIV 20msec/DIV

❷ CN055 ⑥ 20mV/DIV 50 μsec/DIV

❸ IC051 ⑦ 10V/DIV 20 μsec/DIV

● IC701 FA7611M

SECTION 5
REPAIR PARTS LIST

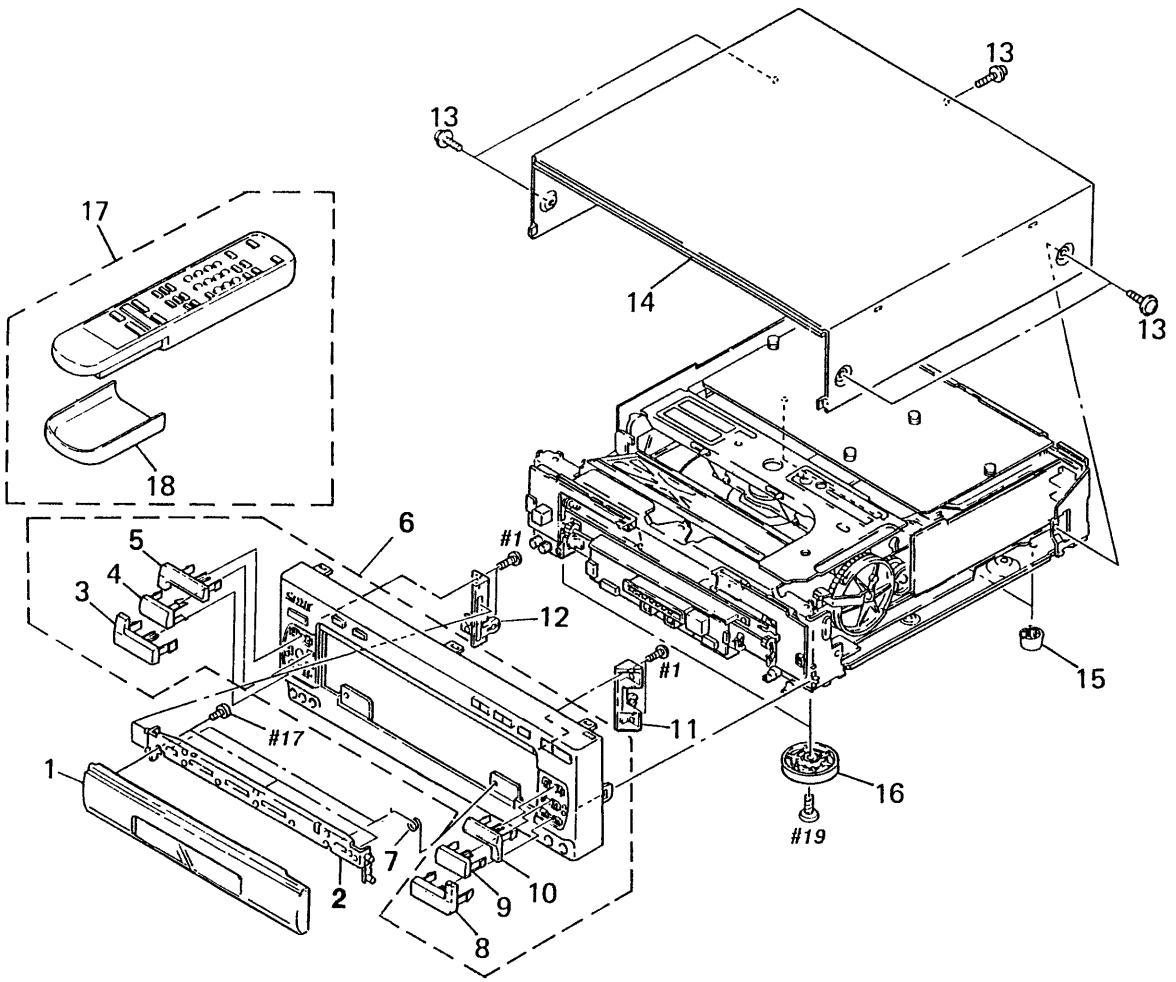
5-1. EXPLODED VIEWS

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE)...(RED)
  ↑ ↑
  Parts color Cabinet's color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

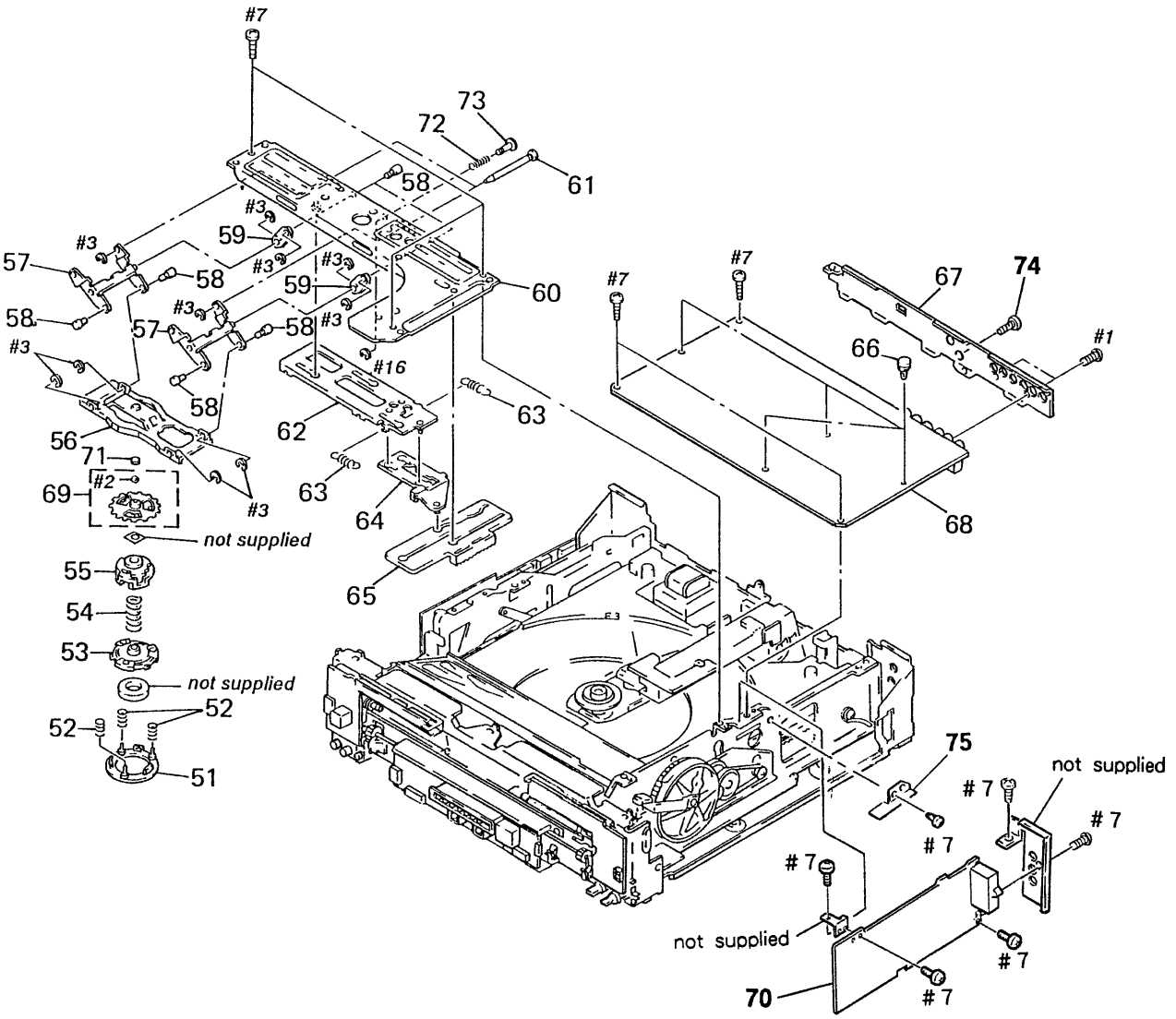
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1-1. UPPER CASE, FRONT PANEL ASSEMBLY



Ref. No.	Part No.	Description	Remarks
1	X-3943-729-1	DOOR ASSY	
2	X-3942-785-1	DISK ASSY, DOOR	
3	3-956-061-31	BUTTON, DISPLAY (LINE IN)	
4	3-956-062-01	WINDOW, REMOTE CONTROL	
5	3-956-060-31	BUTTON, OPEN (OPEN/CLOSE)	
6	X-3943-727-1	PANEL ASSY, FRONT	
7	3-957-697-01	SPRING, TORSION	
8	3-956-065-31	BUTTON, SIDE B (SIDE B)	
9	3-956-066-01	BUTTON, PLAY (▷)	
10	3-956-064-31	BUTTON, SIDE A (SIDE A)	
* 11	3-956-073-01	HOLDER (R), SLIDE	
* 12	3-956-074-01	HOLDER (L), SLIDE	
13	3-710-901-41	SCREW, TAPPING	
* 14	X-3943-911-1	CASE ASSY , UPPER	
* 15	3-957-819-01	FOOT	
16	X-3943-312-1	FOOT ASSY (2.5)	
17	1-467-603-51	REMOTE COMMANDER (RMT-M24A)	
18	9-900-029-01	LID, BATTERY CASE	

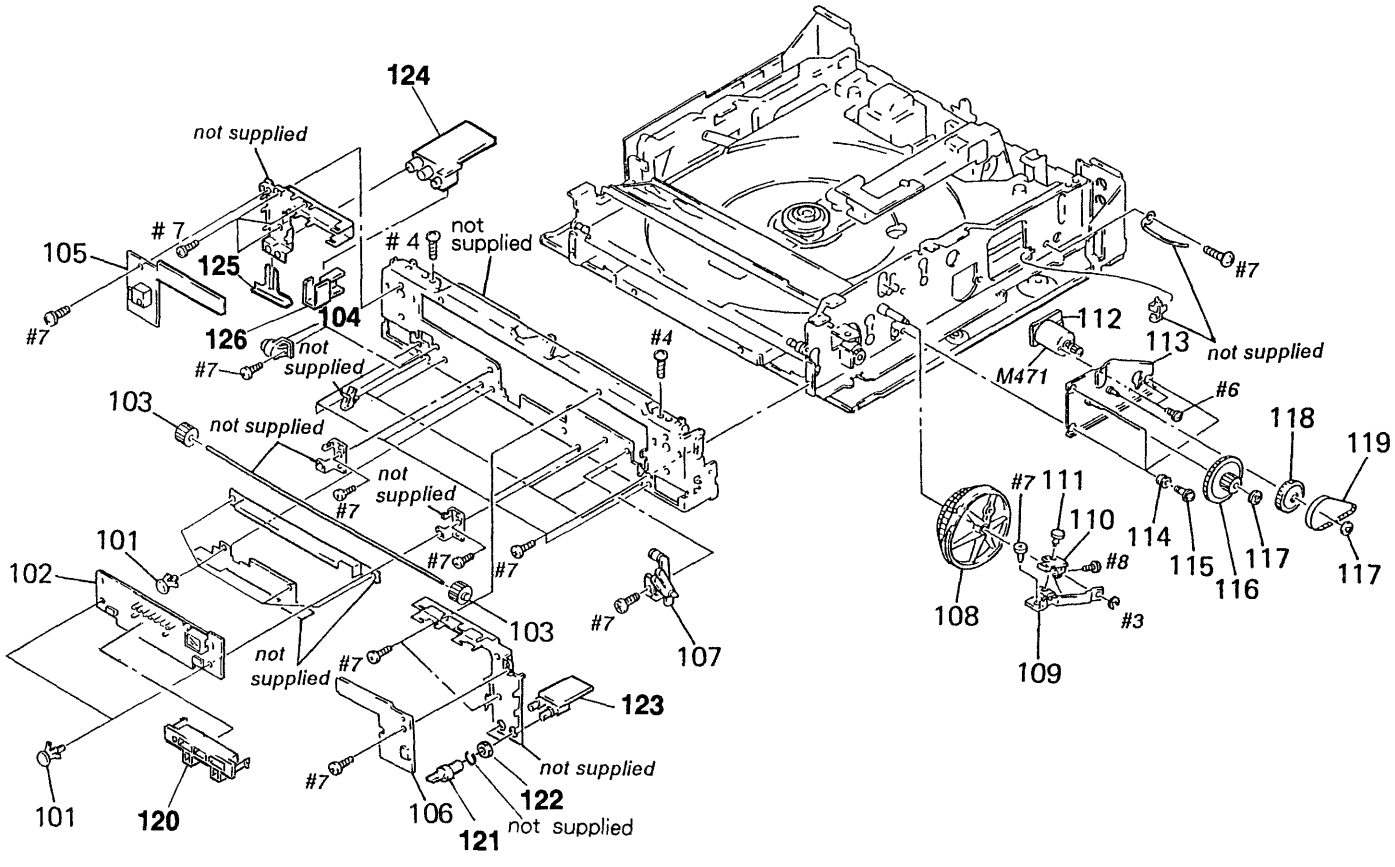
5-1-2. CHUCK FRAME ASSEMBLY



Ref. No.	Part No.	Description	Remarks
51	X-3943-043-1	GUIDE (B) ASSY, CENTER	
52	3-953-290-01	SPRING (2), COMPRESSION	
53	X-3942-776-1	HOLDER ASSY, MAGNET	
54	3-953-291-01	SPRING (1), COMPRESSION	
55	3-953-288-01	PLATE, CHUCKING	
* 56	3-953-354-01	PLATE, CHUCK	
57	X-3942-801-1	ARM (L) ASSY	
* 58	3-953-345-01	SHAFT, ARM (S)	
* 59	3-953-352-01	ARM (S)	
60	X-3942-798-1	FRAME ASSY, CHUCK	
* 61	3-953-355-01	SHAFT, SLIDE	
62	X-3942-799-1	PLATE ASSY, SLIDE	
63	3-486-135-XX	SPRING, TENSION	

Ref. No.	Part No.	Description	Remarks
64	X-3942-800-1	LIMITER ASSY	
65	3-953-348-01	CAM, CHUCK	
* 66	4-386-173-01	SPACER	
* 67	3-956-077-31	PLATE, JACK	
* 68	A-6423-168-A	MB-712 BOARD, COMPLETE	
69	X-3942-787-1	PLATE ASSY, TOP	
* 70	A-6423-175-A	KP-707 BOARD, COMPLETE	
71	3-953-392-01	RETAINER, THRUST	
72	3-353-241-01	SPRING, COMPRESSION	
* 73	3-953-831-01	STOPPER, OPT	
74	3-710-901-41	SCREW, TAPPING	
75	3-955-673-01	SPRING, LEAF	

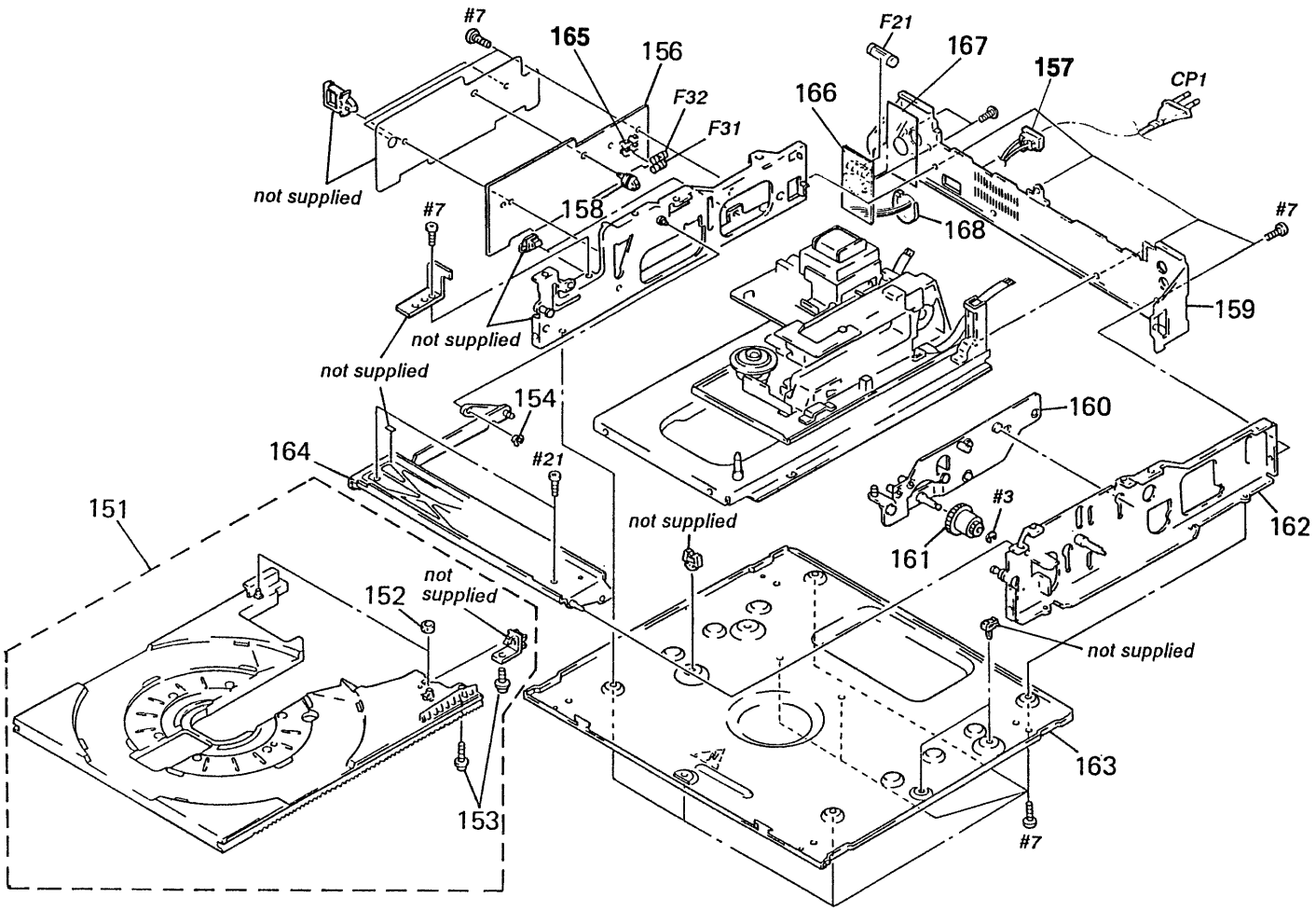
5-1-3. SUB FRONT PANEL ASSEMBLY



Ref. No.	Part No.	Description	Remarks
101	4-812-134-11	RIVET NYLON, 3.5	
* 102	A-6423-171-A	FP-734 BOARD, COMPLETE	
103	3-953-325-01	GEAR, PHASE	
104	4-919-393-01	DAMPER	
* 105	A-6423-174-A	PW-710 BOARD, COMPLETE	
* 106	A-6423-172-A	SW-728 BOARD, COMPLETE	
107	X-3942-786-1	LINK ASSY, DRIVING	
108	3-953-356-01	GEAR, CONTROL	
* 109	3-953-357-01	BRACKET, SW	
110	A-6421-954-A	SW-719 BOARD, COMPLETE	
111	3-531-576-11	RIVET	
112	A-6421-953-A	MT-702 BOARD, COMPLETE	
113	X-3942-805-1	BRACKET ASSY, GEAR	
114	3-570-118-00	CUSHION, MOTOR	

Ref. No.	Part No.	Description	Remarks
115	3-570-027-00	SCREW, MOTOR	
116	3-953-358-01	GEAR, MIDWAY	
117	3-669-595-00	WASHER (2), STOPPER	
118	3-953-394-01	PULLEY (A)	
119	3-953-393-01	BELT, TIMING	
* 120	3-957-924-01	REFLECTOR	
121	A-6415-521-A	KNOB BLOCK ASSY (GR)	
122	4-857-437-00	NUT (9)	
* 123	A-6423-177-A	MA-708 BOARD, COMPLETE	
* 124	A-6423-176-A	JA-701 BOARD, COMPLETE	
* 125	3-957-923-01	RETAINER, JACK	
126	3-955-377-01	PLATE (2GANG), MOUNT	
M471	X-3942-963-1	MOTOR ASSY (LOADING MOTOR)	

5-1-4. CHASSIS ASSEMBLY

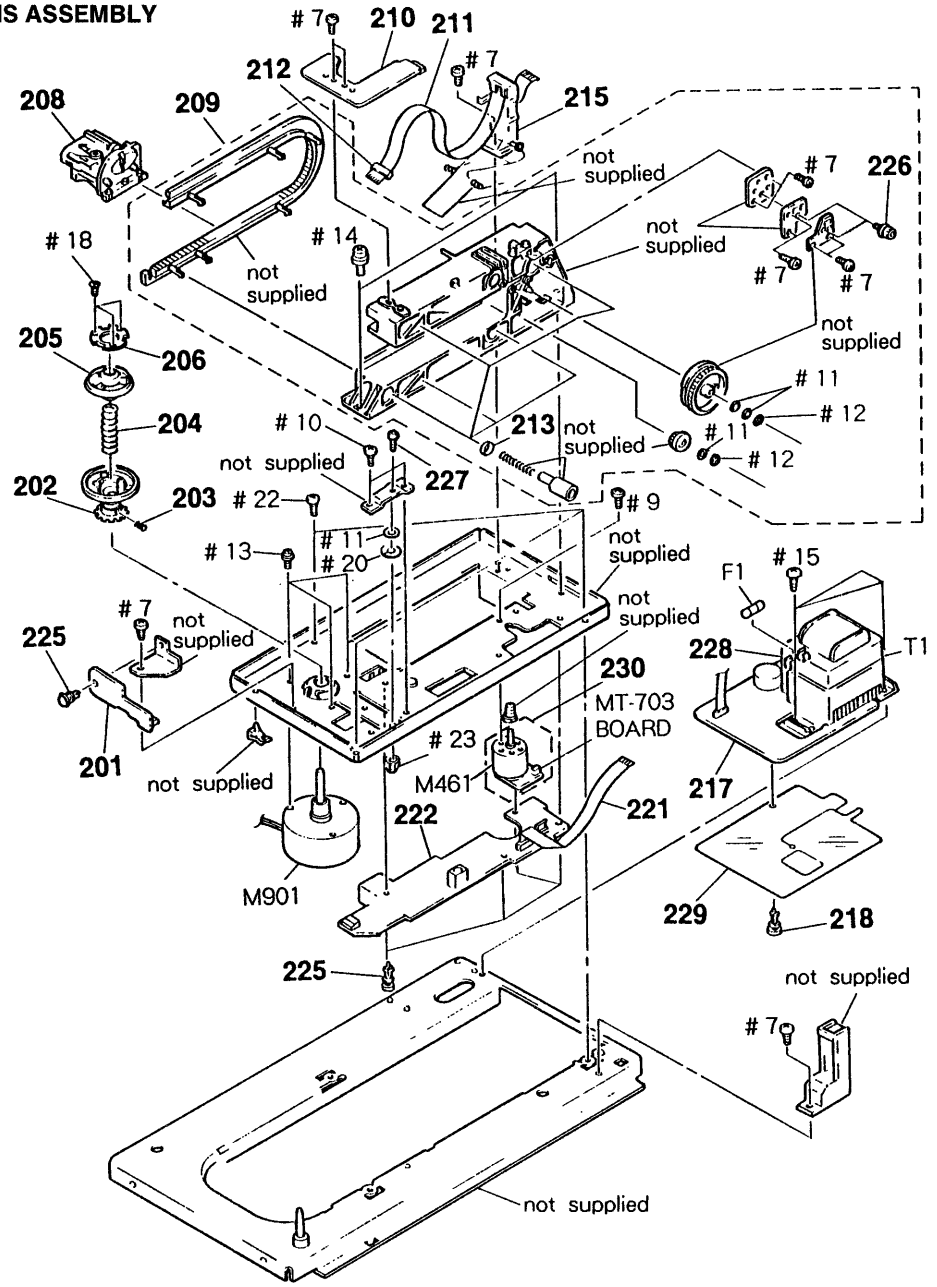


Ref. No.	Part No.	Description	Remarks
151	X-3942-781-1	TRAY ASSY	
* 152	4-914-248-01	STOPPER, RUBBER	
153	3-710-901-11	SCREW, TAPPING	
154	3-703-074-01	CAP 3, SHAFT	
* 156	A-6423-169-A	PS-716 BOARD, COMPLETE	
⚠157	3-703-244-00	BUSHING (2104), CORD	
* 158	4-884-834-00	SUPPORT, PC	
* 159	3-956-082-41	PANEL, REAR	
160	X-3942-802-1	PLATE ASSY, LOADING BASE	
161	3-953-361-01	GEAR, IDLER	

Ref. No.	Part No.	Description	Remarks
162	X-3943-483-1	FRAME (R) ASSY	
* 163	3-953-383-01	PLATE, BOTTOM	
164	X-3942-796-1	FRAME ASSY, TRAY (T)	
⚠165	1-533-223-11	HOLDER, FUSE	
* 166	A-6423-173-A	VS-707 BOARD, COMPLETE	
* 167	3-953-821-03	SHEET, INSULATING	
* 168	3-703-150-11	CLAMP	
⚠CP1	1-575-912-21	CORD, POWER	
⚠F21	1-532-066-00	FUSE, TIME-LAG (0.4A 250V)	
⚠F31	1-532-299-00	FUSE, TIME-LAG (5A/250V)	
⚠F32	1-532-299-00	FUSE, TIME-LAG (5A/250V)	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1-5. MD CHASSIS ASSEMBLY



Ref. No.	Part No.	Description	Remarks
201	A-6421-957-A	FG-704 BOARD, COMPLETE	
202	X-3942-779-1	TURNTABLE ASSY	
203	3-701-507-00	SET SCREW, DOUBLE POINT, (M3X5)	
204	3-953-289-01	SPRING (3), COMPRESSION	
205	3-953-292-01	GUIDE, CENTER	
206	3-953-293-01	PLATE (C), YOKE	
⚠208	8-848-286-11	DEVICE, OPTICAL KHS-150A	
209	A-6404-082-A	BASE BLOCK ASSY, FEED	
210	A-6421-958-A	BI-702 BOARD, COMPLETE	
211	1-751-083-11	CABLE, FLEXIBLE FLAT (18 CORE)	
212	3-953-268-01	HOLDER (18P), FLEXIBLE	
213	3-953-830-01	WASHER, U	
215	A-6404-076-A	STAND ASSY, FLEXIBLE RETAINER	
* 217	A-6423-170-A	TR-718 BOARD, COMPLETE	

Ref. No.	Part No.	Description	Remarks
218	3-531-576-11	RIVET	
221	1-765-530-11	CABLE, FLEXIBLE FLAT (14 CORE)	
222	A-6421-956-A	MD-703 BOARD, COMPLETE	
225	3-703-356-00	RIVET, T TYPE	
226	3-899-249-01	BOLT, HEXAGON SOCKET	
227	3-953-829-01	BOLT	
⚠228	1-533-223-11	HOLDER, FUSE	
⚠229	3-953-377-02	SHEET, INSULATING, TR	
230	X-3942-968-1	MOTOR BLOCK ASSY, TILT	
⚠F1	1-532-215-00	FUSE, TIME-LAG (0.8A/250V)	
M461	1-541-930-11	MOTOR, DC (TILT)	
M901	1-698-109-11	MOTOR, DD (SPINDLE)	
⚠T1	1-423-556-11	TRANSFORMER, POWER	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-2. ELECTRICAL PARTS LIST

NOTE:

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- −XX, −X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS :
  uF : μF
- RESISTORS
  All resistors are in ohms.
  METAL : metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- COILS
  uH : μH
- SEMICONDUCTORS
  In each case, u : μ, for example :
  uA... : μA... , uPA... , μPA... ,
  uPB... , μPB... ,uPC... , μPC... ,
  uPD..., μPD...

Ref. No.	Part No.	Description			Remarks
	A-6421-958-A	BI-702 BOARD, COMPLETE			
		**********			
					(Ref.No. 2,000 Seriese)
	3-953-261-01	HOLDER, PD			
		< CAPACITOR >			
C401	1-163-035-00	CERAMIC CHIP	0.047uF		50V
		< CONNECTOR >			
CN401	1-506-484-11	PIN, CONNECTOR 5P			
		< DIODE >			
D401	8-729-020-74	DIODE	GP1S24		
D402	8-729-020-74	DIODE	GP1S24		
		< JUMPER RESISTOR >			
JR401	1-216-296-00	METAL CHIP	0	5%	1/8W
JR403	1-216-295-91	METAL GLAZE	0	5%	1/10W
JR404	1-216-296-00	METAL CHIP	0	5%	1/8W
JR405	1-216-296-00	METAL CHIP	0	5%	1/8W
		< TRANSISTOR >			
Q401	8-729-904-10	TRANSISTOR	PT360FS		
Q402	8-729-904-10	TRANSISTOR	PT360FS		
Q403	8-729-230-49	TRANSISTOR	2SC2712-YG		
Q404	8-729-230-49	TRANSISTOR	2SC2712-YG		
		< RESISTOR >			
R401	1-216-075-00	METAL CHIP	12K	5%	1/10W
R402	1-216-073-00	METAL CHIP	10K	5%	1/10W
R403	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R404	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R405	1-216-039-00	METAL CHIP	390	5%	1/10W
R406	1-216-111-00	METAL CHIP	390K	5%	1/10W
R407	1-216-099-00	METAL CHIP	120K	5%	1/10W
R408	1-216-073-00	METAL CHIP	10K	5%	1/10W
R409	1-216-073-00	METAL CHIP	10K	5%	1/10W
**********					

Ref. No.	Part No.	Description			Remarks
	A-6421-957-A	FG-704 BOARD, COMPLETE			
		**********			
					(Ref.No. 2,000 Seriese)
		< CAPACITOR >			
C411	1-163-035-00	CERAMIC CHIP	0.047uF		50V
		< CONNECTOR >			
CN411	1-691-863-11	CONNECTOR, BOARD TO BOARD			
		< DIODE >			
D411	8-729-020-74	DIODE	GP1S24		
D412	8-729-020-74	DIODE	GP1S24		
		< JUMPER RESISTOR >			
JR410	1-216-296-00	METAL CHIP	0	5%	1/8W
JR411	1-216-296-00	METAL CHIP	0	5%	1/8W
JR412	1-216-295-91	METAL GLAZE	0	5%	1/10W
		< TRANSISTOR >			
Q411	8-729-216-22	TRANSISTOR	2SA1162-G		
Q412	8-729-216-22	TRANSISTOR	2SA1162-G		
		< RESISTOR >			
R411	1-216-037-00	METAL CHIP	330	5%	1/10W
R412	1-216-097-00	METAL CHIP	100K	5%	1/10W
R413	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R414	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R415	1-216-049-00	METAL CHIP	1K	5%	1/10W
R416	1-216-097-00	METAL CHIP	100K	5%	1/10W
R417	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R418	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R419	1-216-049-00	METAL CHIP	1K	5%	1/10W
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Ref. No.	Part No.	Description	Remarks
*	A-6423-171-A	FP-734 BOARD, COMPLETE	
		**********	
		(Ref. No. 3,000 Seriese)	
*	3-956-076-01	HOLDER, SEGMENT	
		< CAPACITOR >	
C301	1-163-077-91	CERAMIC CHIP 0.1uF	50V
C302	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C305	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C306	1-124-589-11	ELECT 47uF 20%	16V
C307	1-163-031-11	CERAMIC CHIP 0.01uF	50V
⚠C308	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C309	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C310	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C311	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C312	1-163-031-11	CERAMIC CHIP 0.01uF	50V
		< CONNECTOR >	
CN301	1-506-487-11	PIN, CONNECTOR 8P	
CN303	1-506-483-21	PIN, CONNECTOR 4P	
CN304	1-506-486-11	PIN, CONNECTOR 7P	
CN305	1-506-487-11	PIN, CONNECTOR 8P	
CN306	1-506-484-11	PIN, CONNECTOR 5P	
CN307	1-506-491-11	PIN, CONNECTOR 12P	
		< DIODE >	
D300	8-719-302-07	LED SEL1810A (UP)	
D301	8-719-955-04	LED PY5504S-1 (NATURAL)	
D302	8-719-955-04	LED PY5504S-1 (NATURAL)	
D303	8-719-302-07	LED SEL1810A (DOWN)	
D304	8-719-302-07	LED SEL1810A (DOWN)	
D305	8-719-302-07	LED SEL1810A (UP)	
D306	8-719-302-07	LED SEL1810A (KARAOKE PON)	
⚠D307	8-719-988-62	DIODE 1SS355	
D308	8-719-955-04	LED PY5504S-1 (SIDE A)	
D309	8-719-955-04	LED PY5504S-1 (SIDE B)	
D311	8-719-047-76	DIODE GL7D206L	
		< IC >	
⚠IC301	8-759-258-79	IC MB89094PF-G-123 (MODE CONTROL)	
IC302	8-759-043-33	IC LB1721M (LED DRIVE)	
IC303	8-759-074-40	IC PST572DMT-T1 (RESET)	
IC304	8-759-032-29	IC (MARUBUN) MC74HC126AF	
IC304	8-759-235-91	IC (TOSHIBA) TC74HC126AF(EL)	
IC304	8-759-926-06	IC (MOTOROLA) SN74HC126ANS	
		(LINE SELECT SWITCH)	
		< COIL >	
L301	1-410-381-11	INDUCTOR CHIP 10uH	

Ref. No.	Part No.	Description	Remarks
		< TRANSISTOR >	
Q300	8-729-904-57	TRANSISTOR DTB114EK	
Q301	8-729-904-57	TRANSISTOR DTB114EK	
Q303	8-729-901-04	TRANSISTOR DTA114EK	
Q304	8-729-901-04	TRANSISTOR DTA114EK	
Q306	8-729-901-04	TRANSISTOR DTA114EK	
Q307	8-729-901-04	TRANSISTOR DTA114EK	
Q308	8-729-901-04	TRANSISTOR DTA114EK	
Q309	8-729-901-04	TRANSISTOR DTA114EK	
		< RESISTOR >	
R300	1-216-049-00	METAL CHIP 1K 5%	1/10W
R301	1-216-035-00	METAL CHIP 270 5%	1/10W
R302	1-216-035-00	METAL CHIP 270 5%	1/10W
R303	1-216-035-00	METAL CHIP 270 5%	1/10W
R304	1-216-035-00	METAL CHIP 270 5%	1/10W
R305	1-216-035-00	METAL CHIP 270 5%	1/10W
R306	1-216-035-00	METAL CHIP 270 5%	1/10W
R307	1-216-035-00	METAL CHIP 270 5%	1/10W
R308	1-216-033-00	METAL CHIP 220 5%	1/10W
R309	1-216-073-00	METAL CHIP 10K 5%	1/10W
R310	1-216-295-91	METAL GLAZE 0 5%	1/10W
R311	1-216-295-91	METAL GLAZE 0 5%	1/10W
⚠R312	1-208-806-11	METAL GLAZE 10K 0.50%	1/10W
⚠R313	1-208-806-11	METAL GLAZE 10K 0.50%	1/10W
R314	1-216-073-00	METAL CHIP 10K 5%	1/10W
R315	1-216-073-00	METAL CHIP 10K 5%	1/10W
R316	1-216-073-00	METAL CHIP 10K 5%	1/10W
R317	1-216-049-00	METAL CHIP 1K 5%	1/10W
R318	1-216-049-00	METAL CHIP 1K 5%	1/10W
R319	1-216-033-00	METAL CHIP 220 5%	1/10W
R320	1-216-049-00	METAL CHIP 1K 5%	1/10W
R321	1-216-033-00	METAL CHIP 220 5%	1/10W
R322	1-216-033-00	METAL CHIP 220 5%	1/10W
R323	1-216-033-00	METAL CHIP 220 5%	1/10W
R324	1-216-049-00	METAL CHIP 1K 5%	1/10W
R325	1-216-049-00	METAL CHIP 1K 5%	1/10W
R326	1-216-033-00	METAL CHIP 220 5%	1/10W
R327	1-216-033-00	METAL CHIP 220 5%	1/10W
R328	1-216-033-00	METAL CHIP 220 5%	1/10W
R330	1-216-037-00	METAL CHIP 330 5%	1/10W
R331	1-216-037-00	METAL CHIP 330 5%	1/10W
R332	1-216-037-00	METAL CHIP 330 5%	1/10W
R333	1-216-037-00	METAL CHIP 330 5%	1/10W
R334	1-216-037-00	METAL CHIP 330 5%	1/10W
R335	1-216-037-00	METAL CHIP 330 5%	1/10W
R336	1-216-037-00	METAL CHIP 330 5%	1/10W
R337	1-216-073-00	METAL CHIP 10K 5%	1/10W
R338	1-216-049-00	METAL CHIP 1K 5%	1/10W
R339	1-216-073-00	METAL CHIP 10K 5%	1/10W
R340	1-216-037-00	METAL CHIP 330 5%	1/10W

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remarks
R341	1-216-037-00	METAL CHIP	330	5%	1/10W
R344	1-216-295-91	METAL GLAZE	0	5%	1/10W
R345	1-216-073-00	METAL CHIP	10K	5%	1/10W
R347	1-216-073-00	METAL CHIP	10K	5%	1/10W
R352	1-216-295-91	METAL GLAZE	0	5%	1/10W
R354	1-216-295-91	METAL GLAZE	0	5%	1/10W
R355	1-216-033-00	METAL CHIP	220	5%	1/10W
R356	1-216-033-00	METAL CHIP	220	5%	1/10W
R357	1-216-049-00	METAL CHIP	1K	5%	1/10W
R358	1-216-033-00	METAL CHIP	220	5%	1/10W
R359	1-216-033-00	METAL CHIP	220	5%	1/10W
R360	1-216-033-00	METAL CHIP	220	5%	1/10W
R361	1-216-033-00	METAL CHIP	220	5%	1/10W
R362	1-216-049-00	METAL CHIP	1K	5%	1/10W
R363	1-216-033-00	METAL CHIP	220	5%	1/10W
R364	1-216-049-00	METAL CHIP	1K	5%	1/10W
R365	1-216-073-00	METAL CHIP	10K	5%	1/10W
R367	1-216-295-91	METAL GLAZE	0	5%	1/10W
		< SWITCH >			
S301	1-692-440-11	SWITCH, PUSH (DOOR SW)			
		< VIBRATOR >			
X301	1-579-952-21	VIBRATOR, CERAMIC (8MHz)			

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* A-6423-176-A JA-701 BOARD, COMPLETE

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(Ref. No. 11,000 Seriese)

		< CAPACITOR >			
C702	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C703	1-126-947-11	ELECT	47uF	20%	10V
C704	1-124-902-00	ELECT	0.47uF	20%	50V
C705	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C706	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C707	1-126-964-11	ELECT	10uF	20%	50V
C708	1-124-903-11	ELECT	1uF	20%	50V
C709	1-124-903-11	ELECT	1uF	20%	50V
C710	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C711	1-126-964-11	ELECT	10uF	20%	50V
C712	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C713	1-124-902-00	ELECT	0.47uF	20%	50V
C714	1-126-947-11	ELECT	47uF	20%	10V
C715	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C718	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
		< CONNECTOR >			
CN701	1-506-486-11	PIN, CONNECTOR 7P			
		< DIODE >			
D701	8-719-800-76	DIODE 1SS226			
D702	8-719-800-76	DIODE 1SS226			

Ref. No.	Part No.	Description	Remarks
		< FERRITE BEAD >	
FB701	1-412-390-21	INDUCTOR CHIP 0uH	
FB702	1-412-390-21	INDUCTOR CHIP 0uH	
FB703	1-412-390-21	INDUCTOR CHIP 0uH	
FB704	1-412-390-21	INDUCTOR CHIP 0uH	
FB705	1-412-390-21	INDUCTOR CHIP 0uH	
		< FILTER >	
FL701	1-424-031-11	FILTER, NOISE	
FL702	1-424-031-11	FILTER, NOISE	
		< IC >	
IC701	8-759-099-06	IC M5218AFP-TE1 (MIC AMP)	
		< JACK >	
J701	1-507-678-00	JACK (MIC 1/2)	
J702	1-750-990-11	JACK (LARGE TYPE) 2P (MIC 1/MIC 2)	
		< RESISTOR >	

R701	1-216-025-00	METAL CHIP	100	5%	1/10W
R702	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R703	1-216-097-00	METAL CHIP	100K	5%	1/10W
R704	1-216-073-00	METAL CHIP	10K	5%	1/10W
R705	1-216-077-00	METAL CHIP	15K	5%	1/10W
R706	1-216-025-00	METAL CHIP	100	5%	1/10W
R707	1-216-025-00	METAL CHIP	100	5%	1/10W
R708	1-216-097-00	METAL CHIP	100K	5%	1/10W
R709	1-216-073-00	METAL CHIP	10K	5%	1/10W
R710	1-216-077-00	METAL CHIP	15K	5%	1/10W
R711	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R712	1-216-182-00	METAL GLAZE	220	5%	1/8W
R713	1-216-182-00	METAL GLAZE	220	5%	1/8W
R714	1-216-049-00	METAL CHIP	1K	5%	1/10W
R715	1-216-049-00	METAL CHIP	1K	5%	1/10W

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* A-6423-175-A KP-707 BOARD, COMPLETE

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(Ref. No. 8,000 Seriese)

		< CAPACITOR >			
C501	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C502	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C503	1-124-927-11	ELECT	4.7uF	20%	100V
C504	1-124-927-11	ELECT	4.7uF	20%	100V
C505	1-124-927-11	ELECT	4.7uF	20%	100V
C506	1-124-927-11	ELECT	4.7uF	20%	100V
C508	1-124-916-11	ELECT	22uF	20%	63V
C509	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C510	1-126-947-11	ELECT	47uF	20%	10V
C511	1-126-947-11	ELECT	47uF	20%	10V

Ref. No.	Part No.	Description			Remarks
C512	1-126-947-11	ELECT	47uF	20%	10V
C513	1-126-923-11	ELECT	220uF	20%	10V
C514	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C515	1-126-947-11	ELECT	47uF	20%	10V
C516	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C517	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C518	1-126-947-11	ELECT	47uF	20%	10V
C519	1-124-927-11	ELECT	4.7uF	20%	100V
C520	1-126-947-11	ELECT	47uF	20%	10V
C521	1-124-927-11	ELECT	4.7uF	20%	100V
C522	1-124-927-11	ELECT	4.7uF	20%	100V
C523	1-126-947-11	ELECT	47uF	20%	10V
C524	1-126-947-11	ELECT	47uF	20%	10V
C526	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C529	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C530	1-124-927-11	ELECT	4.7uF	20%	100V
C531	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C532	1-136-177-00	FILM	1uF	5%	50V
C533	1-130-479-00	MYLAR	0.0047uF	5%	50V
C535	1-126-947-11	ELECT	47uF	20%	10V
C536	1-126-947-11	ELECT	47uF	20%	10V
C537	1-130-467-00	MYLAR	470PF	5%	50V
C538	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C539	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C540	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C541	1-126-947-11	ELECT	47uF	20%	10V
C542	1-126-947-11	ELECT	47uF	20%	10V
C543	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C544	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C545	1-136-177-00	FILM	1uF	5%	50V
C546	1-136-177-00	FILM	1uF	5%	50V
C547	1-130-479-00	MYLAR	0.0047uF	5%	50V
C548	1-130-479-00	MYLAR	0.0047uF	5%	50V
C549	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C550	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C551	1-126-947-11	ELECT	47uF	20%	10V
C552	1-126-947-11	ELECT	47uF	20%	10V
C553	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C554	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C557	1-126-947-11	ELECT	47uF	20%	10V
C558	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C559	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C560	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C561	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C562	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C563	1-126-947-11	ELECT	47uF	20%	10V
C569	1-130-467-00	MYLAR	470PF	5%	50V
C570	1-130-467-00	MYLAR	470PF	5%	50V
C571	1-126-947-11	ELECT	47uF	20%	10V
C574	1-126-947-11	ELECT	47uF	20%	10V

Ref. No.	Part No.	Description			Remarks
C580	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C581	1-163-087-00	CERAMIC CHIP	4PF		50V
C582	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C583	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C584	1-124-927-11	ELECT	4.7uF	20%	100V
C585	1-136-166-00	FILM	0.12uF	5%	50V
C586	1-136-177-00	FILM	1uF	5%	50V
C587	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C588	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V

< CONNECTOR >

CN501	1-506-489-11	PIN, CONNECTOR 10P	
CN502	1-506-484-11	PIN, CONNECTOR 5P	
CN503	1-506-491-11	PIN, CONNECTOR 12P	
CN504	1-506-483-21	PIN, CONNECTOR 4P	
CN505	1-506-482-11	PIN, CONNECTOR 3P	
CN506	1-506-486-11	PIN, CONNECTOR 7P	

< DIODE >

D501	8-719-800-76	DIODE	1SS226
D502	8-719-976-91	DIODE	DTZ4.3B
D503	8-719-976-91	DIODE	DTZ4.3B
D504	8-719-988-62	DIODE	1SS355
D505	8-719-988-62	DIODE	1SS355
D521	8-719-106-43	DIODE	RD9.1M-B1
D522	8-719-106-43	DIODE	RD9.1M-B1
D580	8-719-988-62	DIODE	1SS355
D581	8-719-104-34	DIODE	1S2836

< FILTER >

FL501	1-424-031-11	FILTER, NOISE
FL502	1-424-031-11	FILTER, NOISE
FL503	1-424-031-11	FILTER, NOISE
FL504	1-424-031-11	FILTER, NOISE
FL542	1-424-031-11	FILTER, NOISE

< IC >

IC500	8-759-262-34	IC	LC83020E (DSP)
IC501	8-759-300-71	IC	HD14053BFP (EXT/INT SELECT)
IC502	8-759-231-53	IC	M5F7805 (+5V REG)
IC503	8-759-634-96	IC	M5207L05 (EVR MIC GAIN/ECHO)
IC504	8-759-262-35	IC	LC32464P-80 (D RAM)
IC510	8-759-099-06	IC	M5218AFP-TE1 (BUFFER)
IC511	8-759-099-06	IC	M5218AFP-TE1 (AMP)
IC513	8-759-099-06	IC	M5218AFP-TE1 (BUFFER)
IC514	8-759-099-06	IC	M5218AFP-TE1 (AMP)
IC541	8-759-982-04	IC	RC5532M (LPF/AMP)
IC542	8-759-177-64	IC	LC8390M-TLM (A/D)

< JACK >

J501	1-565-351-41	JACK, PIN 3P (LINE IN)

Ref. No.	Part No.	Description			Remarks
		< JUMPER RESISTOR >			
JR502	1-216-296-91	METAL GLAZE	0	5%	1/8W
JR592	1-216-296-91	METAL GLAZE	0	5%	1/8W
JR593	1-216-295-91	METAL GLAZE	0	5%	1/10W
JR594	1-216-295-91	METAL GLAZE	0	5%	1/10W
JR595	1-216-295-91	METAL GLAZE	0	5%	1/10W
		< COIL >			
L501	1-424-033-21	FILTER, NOISE			
L502	1-424-033-21	FILTER, NOISE			
		< TRANSISTOR >			
Q501	8-729-900-53	TRANSISTOR	DTC114EK		
Q580	8-729-216-22	TRANSISTOR	2SA1162-G		
Q581	8-729-216-22	TRANSISTOR	2SA1162-G		
Q582	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
		< RESISTOR >			
R501	1-216-049-00	METAL CHIP	1K	5%	1/10W
R502	1-216-049-00	METAL CHIP	1K	5%	1/10W
R503	1-216-073-00	METAL CHIP	10K	5%	1/10W
R504	1-216-097-00	METAL CHIP	100K	5%	1/10W
R505	1-216-097-00	METAL CHIP	100K	5%	1/10W
R506	1-216-097-00	METAL CHIP	100K	5%	1/10W
R507	1-216-097-00	METAL CHIP	100K	5%	1/10W
R508	1-216-097-00	METAL CHIP	100K	5%	1/10W
R509	1-216-097-00	METAL CHIP	100K	5%	1/10W
R510	1-216-049-00	METAL CHIP	1K	5%	1/10W
R511	1-216-097-00	METAL CHIP	100K	5%	1/10W
R512	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R513	1-216-097-00	METAL CHIP	100K	5%	1/10W
R514	1-216-049-00	METAL CHIP	1K	5%	1/10W
R515	1-216-049-00	METAL CHIP	1K	5%	1/10W
R516	1-216-081-00	METAL CHIP	22K	5%	1/10W
R518	1-216-049-00	METAL CHIP	1K	5%	1/10W
R520	1-216-081-00	METAL CHIP	22K	5%	1/10W
R522	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R526	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R527	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R529	1-216-048-00	METAL CHIP	910	5%	1/10W
R530	1-216-097-00	METAL CHIP	100K	5%	1/10W
R531	1-216-050-00	METAL GLAZE	1.1K	5%	1/10W
R532	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R533	1-216-048-00	METAL CHIP	910	5%	1/10W
R534	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R535	1-216-121-00	METAL CHIP	1M	5%	1/10W
R536	1-216-074-00	METAL CHIP	11K	5%	1/10W
R537	1-216-096-00	METAL GLAZE	91K	5%	1/10W
R538	1-216-098-00	METAL CHIP	110K	5%	1/10W
R539	1-216-121-00	METAL CHIP	1M	5%	1/10W
R540	1-216-096-00	METAL GLAZE	91K	5%	1/10W
R541	1-216-097-00	METAL CHIP	100K	5%	1/10W
R542	1-216-097-00	METAL CHIP	100K	5%	1/10W
R543	1-216-048-00	METAL CHIP	910	5%	1/10W
R544	1-216-048-00	METAL CHIP	910	5%	1/10W
R545	1-216-048-00	METAL CHIP	910	5%	1/10W
R546	1-216-050-00	METAL GLAZE	1.1K	5%	1/10W
R547	1-216-050-00	METAL GLAZE	1.1K	5%	1/10W
R548	1-216-048-00	METAL CHIP	910	5%	1/10W
R549	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R550	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R551	1-216-096-00	METAL GLAZE	91K	5%	1/10W
R552	1-216-096-00	METAL GLAZE	91K	5%	1/10W
R553	1-216-074-00	METAL CHIP	11K	5%	1/10W
R554	1-216-074-00	METAL CHIP	11K	5%	1/10W
R555	1-216-098-00	METAL CHIP	110K	5%	1/10W
R556	1-216-098-00	METAL CHIP	110K	5%	1/10W
R557	1-216-096-00	METAL GLAZE	91K	5%	1/10W
R558	1-216-096-00	METAL GLAZE	91K	5%	1/10W
R559	1-216-025-00	METAL CHIP	100	5%	1/10W
R560	1-216-025-00	METAL CHIP	100	5%	1/10W
R561	1-216-025-00	METAL CHIP	100	5%	1/10W
R562	1-216-097-00	METAL CHIP	100K	5%	1/10W
R563	1-216-097-00	METAL CHIP	100K	5%	1/10W
R564	1-216-025-00	METAL CHIP	100	5%	1/10W
R565	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R566	1-216-073-00	METAL CHIP	10K	5%	1/10W
R570	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R571	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R572	1-216-025-00	METAL CHIP	100	5%	1/10W
R573	1-216-025-00	METAL CHIP	100	5%	1/10W
R574	1-216-025-00	METAL CHIP	100	5%	1/10W
R575	1-216-025-00	METAL CHIP	100	5%	1/10W
R576	1-216-025-00	METAL CHIP	100	5%	1/10W
R577	1-216-025-00	METAL CHIP	100	5%	1/10W
R578	1-216-025-00	METAL CHIP	100	5%	1/10W
R580	1-216-049-00	METAL CHIP	1K	5%	1/10W
R581	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R582	1-216-121-00	METAL CHIP	1M	5%	1/10W
R583	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R584	1-216-073-00	METAL CHIP	10K	5%	1/10W
R585	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R586	1-216-049-00	METAL CHIP	1K	5%	1/10W
R587	1-216-085-00	METAL CHIP	33K	5%	1/10W
R589	1-216-073-00	METAL CHIP	10K	5%	1/10W
R647	1-216-121-00	METAL CHIP	1M	5%	1/10W
R648	1-216-121-00	METAL CHIP	1M	5%	1/10W
		< VIBRATOR >			
X501	1-567-814-11	VIBRATOR, CRYSTAL (24.576 MHz)			

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Ref. No.	Part No.	Description			Remarks
*	A-6423-177-A	MA-708 BOARD, COMPLETE			
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		(Ref. No. 10,000 Seriese)			
		< CAPACITOR >			
C401	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C402	1-163-031-11	CERAMIC CHIP	0.01uF		50V
		< CONNECTOR >			
CN401	1-506-483-21	PIN, CONNECTOR 4P			
		< RESISTOR >			
R401	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R402	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R403	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R404	1-216-049-00	METAL CHIP	1K	5% 1/10W	
		< VARIABLE RESISTOR >			
RV401	1-223-685-11	RES, VAR, CARBON 50K (MIC 1/2)			
RV402	1-223-685-11	RES, VAR, CARBON 50K (ECHO)			
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*	A-6423-168-A	MB-712 BOARD, COMPLETE			
		**********			
		(Ref. No. 1,000 Seriese)			
		< CAPACITOR >			
C002	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C004	1-124-465-00	ELECT	0.47uF	20%	50V
C005	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C006	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C007	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C008	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C009	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C010	1-137-370-11	FILM	0.01uF	5%	50V
C011	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C012	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C014	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C015	1-130-489-00	MYLAR	0.033uF	5%	50V
C016	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C017	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C018	1-126-916-11	ELECT	1000uF	20%	6.3V
C019	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C020	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C022	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C023	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C024	1-137-399-11	FILM	0.1uF	5%	50V
C025	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C026	1-126-947-11	ELECT	47uF	20%	10V
C027	1-126-947-11	ELECT	47uF	20%	10V
C029	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C030	1-163-103-00	CERAMIC CHIP	27PF	5%	50V

Ref. No.	Part No.	Description			Remarks
C031	1-163-107-00	CERAMIC CHIP	39PF	5%	50V
C032	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C034	1-137-374-11	FILM	0.047uF	5%	50V
C035	1-130-489-00	MYLAR	0.033uF	5%	50V
C036	1-137-440-11	FILM	0.018uF	5%	50V
C037	1-130-489-00	MYLAR	0.033uF	5%	50V
C038	1-124-903-11	ELECT	1uF	20%	50V
C039	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C040	1-124-925-11	ELECT	2.2uF	20%	100V
C041	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C042	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C043	1-137-370-11	FILM	0.01uF	5%	50V
C045	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C046	1-126-947-11	ELECT	47uF	20%	10V
C047	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C048	1-137-370-11	FILM	0.01uF	5%	50V
C049	1-124-903-11	ELECT	1uF	20%	50V
C050	1-137-374-11	FILM	0.047uF	5%	50V
C051	1-124-903-11	ELECT	1uF	20%	50V
C052	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C053	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C055	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C056	1-126-947-11	ELECT	47uF	20%	10V
C057	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C060	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C061	1-126-947-11	ELECT	47uF	20%	10V
C063	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C064	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C065	1-137-374-11	FILM	0.047uF	5%	50V
C066	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C067	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C068	1-126-916-11	ELECT	1000uF	20%	6.3V
C069	1-163-253-11	CERAMIC CHIP	120PF	5%	50V
C070	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C071	1-126-947-11	ELECT	47uF	20%	10V
C072	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C073	1-163-253-11	CERAMIC CHIP	120PF	5%	50V
C074	1-124-903-11	ELECT	1uF	20%	50V
C075	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C076	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C077	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C078	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C079	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C080	1-163-253-11	CERAMIC CHIP	120PF	5%	50V
C081	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C082	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C083	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C084	1-124-292-00	ELECT	33uF	20%	6.3V
C085	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C086	1-163-237-11	CERAMIC CHIP	27PF	5%	50V

Ref. No.	Part No.	Description			Remarks
C087	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C088	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C089	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C091	1-126-947-11	ELECT	47uF	20%	10V
C092	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C093	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C095	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C096	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C097	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C098	1-126-947-11	ELECT	47uF	20%	10V
C099	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C100	1-124-903-11	ELECT	1uF	20%	50V
C101	1-137-372-11	FILM	0.022uF	5%	50V
C102	1-137-370-11	FILM	0.01uF	5%	50V
C103	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C104	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C105	1-131-347-00	TANTALUM	1uF	10%	35V
C106	1-124-903-11	ELECT	1uF	20%	50V
C108	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C109	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C110	1-126-916-11	ELECT	1000uF	20%	6.3V
C111	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C112	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C113	1-124-925-11	ELECT	2.2uF	20%	100V
C114	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C115	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C116	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C117	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C118	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C120	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C121	1-124-925-11	ELECT	2.2uF	20%	100V
C122	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C124	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C125	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C126	1-126-947-11	ELECT	47uF	20%	10V
C128	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C129	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C130	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C131	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C132	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C133	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C136	1-163-116-00	CERAMIC CHIP	91PF	5%	50V
C137	1-126-964-11	ELECT	10uF	20%	50V
C138	1-126-964-11	ELECT	10uF	20%	50V
C139	1-126-964-11	ELECT	10uF	20%	50V
C140	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C141	1-126-947-11	ELECT	47uF	20%	10V
C147	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C148	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C149	1-163-038-00	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remarks
C150	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C151	1-163-077-91	CERAMIC CHIP	0.1uF		50V
C152	1-126-947-11	ELECT	47uF	20%	10V
C153	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C154	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C158	1-124-925-11	ELECT	2.2uF	20%	100V
C160	1-126-947-11	ELECT	47uF	20%	10V
C162	1-126-947-11	ELECT	47uF	20%	10V
C163	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C164	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C165	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C166	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C167	1-163-249-11	CERAMIC CHIP	82PF	5%	50V
C169	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C172	1-126-947-11	ELECT	47uF	20%	10V
C173	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C174	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C203	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C206	1-124-927-11	ELECT	4.7uF	20%	100V
C207	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C208	1-126-964-11	ELECT	10uF	20%	50V
C211	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C212	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C213	1-126-947-11	ELECT	47uF	20%	10V
C214	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C215	1-137-368-11	FILM	0.0047uF	5%	50V
C216	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C217	1-124-927-11	ELECT	4.7uF	20%	100V
C218	1-126-947-11	ELECT	47uF	20%	10V
C219	1-124-927-11	ELECT	4.7uF	20%	100V
C220	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C221	1-126-947-11	ELECT	47uF	20%	10V
C222	1-137-433-11	FILM	0.0012uF	5%	50V
C223	1-126-947-11	ELECT	47uF	20%	10V
C225	1-126-947-11	ELECT	47uF	20%	10V
C226	1-137-433-11	FILM	0.0012uF	5%	50V
C227	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C228	1-124-927-11	ELECT	4.7uF	20%	100V
C229	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C230	1-126-947-11	ELECT	47uF	20%	10V
C231	1-126-947-11	ELECT	47uF	20%	10V
C233	1-126-947-11	ELECT	47uF	20%	10V
C234	1-124-927-11	ELECT	4.7uF	20%	100V
C237	1-137-368-11	FILM	0.0047uF	5%	50V
C239	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C240	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C241	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C243	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C244	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C245	1-163-038-00	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remarks
C248	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C249	1-163-128-00	CERAMIC CHIP	300PF	5%	50V
C251	1-124-287-00	ELECT	10uF	20%	10V
C252	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C253	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C254	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C255	1-124-499-11	ELECT, NONPOLAR	1uF	20%	50V
C257	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C258	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C259	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C260	1-126-947-11	ELECT	47uF	20%	10V
C261	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C262	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C263	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C264	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C265	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C271	1-124-287-00	ELECT	10uF	20%	10V
C272	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C273	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C274	1-137-368-11	FILM	0.0047uF	5%	50V
C275	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C276	1-126-947-11	ELECT	47uF	20%	10V
C277	1-137-399-11	FILM	0.1uF	5%	50V
C278	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C279	1-137-442-11	FILM	0.039uF	5%	50V
C280	1-136-169-00	FILM	0.22uF	5%	50V
C281	1-126-933-11	ELECT	100uF	20%	10V
C282	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C283	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C284	1-136-169-00	FILM	0.22uF	5%	50V
C285	1-137-442-11	FILM	0.039uF	5%	50V
C286	1-124-902-00	ELECT	0.47uF	20%	50V
C287	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C288	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C289	1-137-368-11	FILM	0.0047uF	5%	50V
C290	1-126-947-11	ELECT	47uF	20%	10V
C291	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C292	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C293	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C294	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C297	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C298	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C299	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C300	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C399	1-216-295-91	METAL GLAZE	0	5%	1/10W
C400	1-164-346-11	CERAMIC CHIP	1uF		16V
C401	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C402	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C403	1-163-133-00	CERAMIC CHIP	470PF	5%	50V

Ref. No.	Part No.	Description			Remarks
C406	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C407	1-124-277-11	ELECT	4.7uF	20%	35V
C408	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C409	1-163-024-00	CERAMIC CHIP	0.018uF	10%	50V
C410	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C411	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C413	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C414	1-124-767-00	ELECT	2.2uF	20%	50V
C415	1-163-014-00	CERAMIC CHIP	0.0027uF	5%	50V
C417	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C419	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C421	1-124-499-11	ELECT, NONPOLAR	1uF	20%	50V
C422	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C423	1-124-287-00	ELECT	10uF	20%	10V
C424	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C425	1-124-273-00	ELECT	3.3uF	20%	50V
C427	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C428	1-126-947-11	ELECT	47uF	20%	35V
C429	1-163-249-11	CERAMIC CHIP	82PF	5%	50V
C430	1-126-947-11	ELECT	47uF	20%	35V
C432	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C433	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C434	1-163-024-00	CERAMIC CHIP	0.018uF	10%	50V
C435	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C436	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C437	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C438	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C439	1-126-947-11	ELECT	47uF	20%	10V
C440	1-126-947-11	ELECT	47uF	20%	10V
C441	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C442	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C443	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C444	1-126-160-11	ELECT	1uF	20%	50V
C445	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C446	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C447	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C448	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C449	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C450	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C451	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C452	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C463	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C465	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C466	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C467	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C468	1-164-699-11	CERAMIC CHIP	0.0033uF	5%	50V
C469	1-163-088-00	CERAMIC CHIP	5PF		50V
C500	1-126-947-11	ELECT	47uF	20%	10V
C501	1-128-453-21	ELECT CHIP	47uF	20%	6.3V
C502	1-163-251-11	CERAMIC CHIP	100PF	5%	50V

Ref. No.	Part No.	Description			Remarks
C503	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C504	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C505	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C506	1-128-024-11	ELECT CHIP	4.7uF	0	10V
C507	1-126-947-11	ELECT	47uF	20%	35V
C508	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C510	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C511	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C512	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C513	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C514	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C515	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C516	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C517	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C518	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C519	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C520	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C522	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C523	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C526	1-137-364-11	FILM	0.001uF	5%	50V
C529	1-137-366-11	FILM	0.0022uF	5%	50V
C530	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C531	1-124-925-11	ELECT	2.2uF	20%	100V
C533	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C590	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C801	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C802	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C950	1-126-964-11	ELECT	10uF	20%	50V
		< FILTER >			
CF001	1-527-831-00	FILTER, CERAMIC			
		< CONNECTOR >			
* CN201	1-568-787-11	PIN, CONNECTOR 10P			
CN202	1-506-470-11	PIN, CONNECTOR 5P			
CN206	1-506-469-11	PIN, CONNECTOR 4P			
CN401	1-750-687-11	HOUSING, CONNECTOR (PC BOARD)			
* CN402	1-764-594-21	CONNECTOR, FPC 18P			
* CN403	1-764-595-21	CONNECTOR, FPC 14P			
CN500	1-506-468-11	PIN, CONNECTOR 3P			
CN501	1-506-468-11	PIN, CONNECTOR 3P			
CN502	1-506-469-11	PIN, CONNECTOR 4P			
CN503	1-506-472-11	PIN, CONNECTOR 7P			
CN504	1-506-473-11	PIN, CONNECTOR 8P			
* CN505	1-568-783-11	PIN, CONNECTOR 6P			
CN701	1-506-473-11	PIN, CONNECTOR 8P			
		< TRIMMER >			
CT001	1-141-442-91	TRIMMER, CERAMIC 20PF			
CT501	1-141-424-11	CAP, ADJ 30PF			

Ref. No.	Part No.	Description	Remarks
		< DIODE >	
D001	8-719-105-52	DIODE RD3.6M-B2	
D002	8-719-801-78	DIODE 1SS184	
D003	8-719-988-62	DIODE 1SS355	
D202	8-719-105-82	DIODE RD5.1M-B2	
D203	8-719-032-05	DIODE KV1460TL00	
D205	8-719-801-78	DIODE 1SS184	
D208	8-719-801-78	DIODE 1SS184	
D251	8-719-800-76	DIODE 1SS226	
D253	8-719-800-76	DIODE 1SS226	
D401	8-719-800-76	DIODE 1SS226	
D402	8-719-800-76	DIODE 1SS226	
D403	8-719-800-76	DIODE 1SS226	
D405	8-719-988-62	DIODE 1SS355	
D502	8-719-402-34	DIODE MA3120-TX	
D503	8-719-988-62	DIODE 1SS355	
D506	8-719-104-34	DIODE 1S2836	
D507	8-719-988-62	DIODE 1SS355	
D508	8-719-988-62	DIODE 1SS355	
D550	8-729-900-61	TRANSISTOR DTA114ES	
		< FILTER >	
FL003	1-409-810-11	FILTER, LOW PASS	
FL004	1-236-478-11	FILTER, LOW PASS	
FL005	1-239-823-21	FILTER, CHROMA TRAP	
FL006	1-235-943-11	BPF	
FL007	1-239-824-11	LPF (3MHz)	
FL008	1-408-409-00	INDUCTOR 10uH	
FL205	1-760-185-11	FILTER, CERAMIC	
FL206	1-760-186-11	FILTER, CERAMIC	
FL401	1-235-922-11	FILTER, LOW PASS (1.7MHz)	
		< IC >	
IC001	8-759-058-52	IC XRA10324AF-E2 (AMP)	
IC002	8-759-058-52	IC XRA10324AF-E2 (AMP)	
IC003	8-759-100-97	IC uPC339G2 (HYSTERESIS COMPARATOR)	
IC004	8-752-353-92	IC CXL5005M-T4 (CCD 1H DELAY)	
IC005	8-759-233-64	IC TC74HCU04AF (INVERTER)	
IC006	8-759-257-87	IC MM1117XFBE (SWITCH)	
IC007	8-752-055-37	IC CXA1255Q (VIDEO SIGNAL PROCESSOR)	
IC008	8-759-502-69	IC CXD1152-MS (C MOS INV)	
IC009	8-752-055-36	IC CXA1254Q (DEMODULATOR)	
IC011	8-759-098-80	IC MB90085-123 (CHARACTER GENERATOR)	
IC201	8-759-093-98	IC CXD8451M-ET (D/A CONVERTER)	
IC202	8-759-008-67	IC MC14066BF (LINE OUT SELECT)	
IC203	8-752-351-78	IC CXD2500BQ (DIGITAL SIGNAL PROCESSOR)	
IC204	8-759-253-26	IC CA0002AM-TP (AFM DEMOD CX NR)	
IC205	8-759-100-96	IC uPC4558G2 (CD SPINDLE ERROR AMP)	

Ref. No.	Part No.	Description	Remarks
IC206	8-759-100-96	IC uPC4558G2 (L.P.F AMP)	
IC207	8-759-100-96	IC uPC4558G2 (L.P.F AMP)	
IC208	8-759-100-96	IC uPC4558G2 (AMP)	
IC209	8-759-100-96	IC uPC4558G2 (AMP)	
IC401	8-752-056-79	IC CXA1632Q (SERVO)	
IC402	8-759-048-30	IC LA6510L (SLED DRIVE AMP)	
IC403	8-759-300-71	IC HD14053BFP (SWITCH)	
IC404	8-759-300-71	IC HD14053BFP (SWITCH)	
IC405	8-759-060-00	IC BA10324AF (TILT ERROR AMP ADD)	
IC406	8-759-100-96	IC uPC4558G2 (DRIVE AMP)	
IC409	8-759-100-96	IC uPC4558G2 (PHASE AMP)	
IC410	8-759-242-64	IC TC4W53F (RF AMP)	
IC411	8-759-100-96	IC uPC4558G2 (PHASE AMP)	
IC420	8-759-242-64	IC TC4W53F (TRACKING ERROR AMP)	
IC500	8-759-100-97	IC uPC339G2 (COMPARATOR)	
IC501	8-759-258-78	IC MB89094PF-G-122 (SYSTEM CONTROL)	
IC502	8-759-098-78	IC MB606F06 (SYSTEM CONTROL)	
IC503	8-759-973-95	IC BA6219B (MOTOR DRIVE)	
IC504	8-759-058-52	IC XRA10324AF-E2 (AMP)	
IC505	8-759-009-06	IC MC14052BF (SIGNAL SELECT)	
IC506	8-759-300-71	IC HD14053BFP (SWITCH)	
IC507	8-759-206-28	IC MC74HC123F (MONO MULTI)	
		< JACK >	
J201	1-764-592-11	JACK 3P (LINE OUT 1)	
J202	1-764-592-11	JACK 3P (LINE OUT 2)	
		< JUMPER RESISTOR >	
JR001	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR002	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR003	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR004	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR005	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR006	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR007	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR008	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR009	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR010	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR011	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR204	1-216-097-00	METAL CHIP 100K 5% 1/10W	
JR207	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR210	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR235	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR282	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR401	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR402	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR403	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR502	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR502	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR511	1-216-295-91	METAL GLAZE 0 5% 1/10W	

Ref. No.	Part No.	Description	Remarks
		< COIL >	
L003	1-408-419-00	INDUCTOR 68uH	
L008	1-410-657-21	INDUCTOR CHIP 180uH	
L010	1-408-421-00	INDUCTOR 100uH	
L011	1-408-422-00	INDUCTOR 120uH	
L015	1-410-385-11	INDUCTOR CHIP 22uH	
L016	1-408-609-41	INDUCTOR 33uH	
L017	1-408-773-31	INDUCTOR CHIP 4.7uH	
L201	1-408-421-00	INDUCTOR 100uH	
L202	1-408-418-00	INDUCTOR 56uH	
L210	1-408-417-00	INDUCTOR 47uH	
L401	1-408-409-00	INDUCTOR 10uH	
L402	1-408-409-00	INDUCTOR 10uH	
L501	1-410-381-11	INDUCTOR CHIP 10uH	
		< TRANSISTOR >	
Q001	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q002	8-729-140-75	TRANSISTOR 2SD999-CLCK	
Q003	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q004	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q005	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q006	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q007	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q008	8-729-216-22	TRANSISTOR 2SA1162-G	
Q009	8-729-216-22	TRANSISTOR 2SA1162-G	
Q010	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q011	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q012	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q013	8-729-216-22	TRANSISTOR 2SA1162-G	
Q014	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q015	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q016	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q017	8-729-216-22	TRANSISTOR 2SA1162-G	
Q018	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q019	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q021	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q024	8-729-216-22	TRANSISTOR 2SA1162-G	
Q026	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q031	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q201	8-729-901-04	TRANSISTOR DTA114EK	
Q202	8-729-900-53	TRANSISTOR DTC114EK	
Q203	8-729-231-55	TRANSISTOR 2SC2878-AB	
Q204	8-729-202-38	TRANSISTOR 2SC3326N	
Q205	8-729-901-04	TRANSISTOR DTA114EK	
Q207	8-729-231-55	TRANSISTOR 2SC2878-AB	
Q209	8-729-202-38	TRANSISTOR 2SC3326N	
Q210	8-729-901-04	TRANSISTOR DTA114EK	
Q211	8-729-900-53	TRANSISTOR DTC114EK	
Q212	8-729-900-53	TRANSISTOR DTC114EK	
Q213	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q214	8-729-901-04	TRANSISTOR DTA114EK	

Ref. No.	Part No.	Description	Remarks
Q215	8-729-901-04	TRANSISTOR DTA114EK	
Q216	8-729-900-53	TRANSISTOR DTC114EK	
Q217	8-729-901-04	TRANSISTOR DTA114EK	
Q218	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q219	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q222	8-729-900-53	TRANSISTOR DTC114EK	
Q400	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q401	8-729-216-22	TRANSISTOR 2SA1162	
Q403	8-729-024-95	TRANSISTOR 2SB1565EF	
Q404	8-729-019-01	TRANSISTOR 2SD2394-EF	
Q405	8-729-019-01	TRANSISTOR 2SD2394-EF	
Q406	8-729-024-95	TRANSISTOR 2SB1565EF	
Q407	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q408	8-729-901-04	TRANSISTOR DTA114EK	
Q409	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q410	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q411	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q412	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q500	8-729-900-53	TRANSISTOR DTC114EK	
Q501	8-729-216-22	TRANSISTOR 2SA1162	
Q502	8-729-901-04	TRANSISTOR DTA114EK	
Q503	8-729-901-04	TRANSISTOR DTA114EK	
Q504	8-729-901-04	TRANSISTOR DTA114EK	
Q505	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q506	8-729-900-53	TRANSISTOR DTC114EK	
Q507	8-729-900-53	TRANSISTOR DTC114EK	
Q950	8-729-202-38	TRANSISTOR 2SC3326N-G	
Q951	8-729-901-04	TRANSISTOR DTA114EK	

< RESISTOR >

Ref. No.	Part No.	Description			Remarks
R001	1-216-075-00	METAL CHIP	12K	5%	1/10W
R002	1-216-085-00	METAL CHIP	33K	5%	1/10W
R003	1-216-085-00	METAL CHIP	33K	5%	1/10W
R004	1-216-073-00	METAL CHIP	10K	5%	1/10W
R005	1-216-073-00	METAL CHIP	10K	5%	1/10W
R006	1-216-073-00	METAL CHIP	10K	5%	1/10W
R007	1-216-049-00	METAL CHIP	1K	5%	1/10W
R008	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R009	1-216-073-00	METAL CHIP	10K	5%	1/10W
R010	1-216-077-00	METAL CHIP	15K	5%	1/10W
R011	1-216-095-00	METAL CHIP	82K	5%	1/10W
R012	1-216-081-00	METAL CHIP	22K	5%	1/10W
R013	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R014	1-216-075-00	METAL CHIP	12K	5%	1/10W
R015	1-216-097-00	METAL CHIP	100K	5%	1/10W
R016	1-216-097-00	METAL CHIP	100K	5%	1/10W
R017	1-216-049-00	METAL CHIP	1K	5%	1/10W
R018	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R019	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R020	1-216-097-00	METAL CHIP	100K	5%	1/10W
R021	1-208-830-11	METAL GLAZE	100K	0.50%	1/10W
R022	1-208-830-11	METAL GLAZE	100K	0.50%	1/10W
R023	1-216-113-00	METAL CHIP	470K	5%	1/10W
R024	1-208-830-11	METAL GLAZE	100K	0.50%	1/10W
R025	1-208-830-11	METAL GLAZE	100K	0.50%	1/10W
R026	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R027	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R028	1-216-113-00	METAL CHIP	470K	5%	1/10W
R029	1-208-806-11	METAL GLAZE	10K	0.50%	1/10W
R030	1-208-804-11	METAL GLAZE	8.2K	0.50%	1/10W
R031	1-208-806-11	METAL GLAZE	10K	0.50%	1/10W
R032	1-208-800-11	METAL GLAZE	5.6K	0.50%	1/10W
R033	1-216-079-00	METAL CHIP	18K	5%	1/10W
R034	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R035	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R036	1-216-113-00	METAL CHIP	470K	5%	1/10W
R037	1-216-073-00	METAL CHIP	10K	5%	1/10W
R038	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R039	1-216-079-00	METAL CHIP	18K	5%	1/10W
R040	1-216-077-00	METAL CHIP	15K	5%	1/10W
R041	1-208-830-11	METAL GLAZE	100K	0.50%	1/10W
R042	1-208-830-11	METAL GLAZE	100K	0.50%	1/10W
R043	1-216-121-00	METAL CHIP	1M	5%	1/10W
R044	1-216-077-00	METAL CHIP	15K	5%	1/10W
R045	1-216-049-00	METAL CHIP	1K	5%	1/10W
R046	1-216-033-00	METAL CHIP	220	5%	1/10W
R047	1-216-041-00	METAL CHIP	470	5%	1/10W
R048	1-216-040-00	METAL GLAZE	430	5%	1/10W
R049	1-216-041-00	METAL CHIP	470	5%	1/10W
R050	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R051	1-216-049-00	METAL CHIP	1K	5%	1/10W
R052	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R053	1-216-049-00	METAL CHIP	1K	5%	1/10W
R054	1-216-043-00	METAL CHIP	560	5%	1/10W
R055	1-216-091-00	METAL CHIP	56K	5%	1/10W
R056	1-216-077-00	METAL CHIP	15K	5%	1/10W
R057	1-216-041-00	METAL CHIP	470	5%	1/10W
R058	1-216-049-00	METAL CHIP	1K	5%	1/10W
R059	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R060	1-216-049-00	METAL CHIP	1K	5%	1/10W
R061	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R062	1-216-049-00	METAL CHIP	1K	5%	1/10W
R063	1-216-049-00	METAL CHIP	1K	5%	1/10W
R064	1-216-121-00	METAL CHIP	1M	5%	1/10W
R065	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R066	1-216-021-00	METAL CHIP	68	5%	1/10W
R067	1-216-083-00	METAL CHIP	27K	5%	1/10W
R068	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R069	1-216-097-00	METAL CHIP	100K	5%	1/10W
R070	1-216-077-00	METAL CHIP	15K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R071	1-216-113-00	METAL CHIP	470K	5%	1/10W
R072	1-216-083-00	METAL CHIP	27K	5%	1/10W
R073	1-216-097-00	METAL CHIP	100K	5%	1/10W
R074	1-216-097-00	METAL CHIP	100K	5%	1/10W
R075	1-216-113-00	METAL CHIP	470K	5%	1/10W
R076	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R077	1-216-095-00	METAL CHIP	82K	5%	1/10W
R078	1-216-097-00	METAL CHIP	100K	5%	1/10W
R079	1-216-097-00	METAL CHIP	100K	5%	1/10W
R080	1-216-113-00	METAL CHIP	470K	5%	1/10W
R081	1-216-049-00	METAL CHIP	1K	5%	1/10W
R082	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R083	1-216-079-00	METAL CHIP	18K	5%	1/10W
R084	1-216-109-00	METAL CHIP	330K	5%	1/10W
R085	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R086	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R087	1-216-109-00	METAL CHIP	330K	5%	1/10W
R088	1-216-121-00	METAL CHIP	1M	5%	1/10W
R089	1-216-121-00	METAL CHIP	1M	5%	1/10W
R090	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R091	1-216-077-00	METAL CHIP	15K	5%	1/10W
R092	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R093	1-216-075-00	METAL CHIP	12K	5%	1/10W
R094	1-216-043-00	METAL CHIP	560	5%	1/10W
R095	1-216-079-00	METAL CHIP	18K	5%	1/10W
R096	1-216-043-00	METAL CHIP	560	5%	1/10W
R097	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R098	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R099	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R100	1-216-073-00	METAL CHIP	10K	5%	1/10W
R101	1-216-009-00	METAL CHIP	22	5%	1/10W
R102	1-216-073-00	METAL CHIP	10K	5%	1/10W
R103	1-216-073-00	METAL CHIP	10K	5%	1/10W
R104	1-216-121-00	METAL CHIP	1M	5%	1/10W
R105	1-216-073-00	METAL CHIP	10K	5%	1/10W
R106	1-216-097-00	METAL CHIP	100K	5%	1/10W
R107	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R108	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R109	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R110	1-216-097-00	METAL CHIP	100K	5%	1/10W
R111	1-216-073-00	METAL CHIP	10K	5%	1/10W
R112	1-216-085-00	METAL CHIP	33K	5%	1/10W
R113	1-216-097-00	METAL CHIP	100K	5%	1/10W
R114	1-216-097-00	METAL CHIP	100K	5%	1/10W
R115	1-216-085-00	METAL CHIP	33K	5%	1/10W
R116	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R117	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R118	1-216-085-00	METAL CHIP	33K	5%	1/10W
R119	1-216-079-00	METAL CHIP	18K	5%	1/10W
R120	1-216-047-00	METAL CHIP	820	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R121	1-216-085-00	METAL CHIP	33K	5%	1/10W
R122	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R123	1-216-037-00	METAL CHIP	330	5%	1/10W
R124	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R125	1-216-295-91	METAL GLAZE	0	5%	1/10W
R126	1-216-081-00	METAL CHIP	22K	5%	1/10W
R127	1-216-033-00	METAL CHIP	220	5%	1/10W
R128	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R129	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R130	1-208-782-11	METAL GLAZE	1K	0.50%	1/10W
R131	1-208-781-11	METAL GLAZE	910	0.50%	1/10W
R132	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R133	1-216-081-00	METAL CHIP	22K	5%	1/10W
R134	1-216-081-00	METAL CHIP	22K	5%	1/10W
R137	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R138	1-216-039-00	METAL CHIP	390	5%	1/10W
R139	1-216-091-00	METAL CHIP	56K	5%	1/10W
R140	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R141	1-216-041-00	METAL CHIP	470	5%	1/10W
R142	1-216-043-00	METAL CHIP	560	5%	1/10W
R143	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R144	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R145	1-216-049-00	METAL CHIP	1K	5%	1/10W
R146	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R147	1-216-045-00	METAL CHIP	680	5%	1/10W
R148	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R149	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R150	1-216-095-00	METAL CHIP	82K	5%	1/10W
R151	1-216-045-00	METAL CHIP	680	5%	1/10W
R152	1-216-033-00	METAL CHIP	220	5%	1/10W
R153	1-216-081-00	METAL CHIP	22K	5%	1/10W
R154	1-216-081-00	METAL CHIP	22K	5%	1/10W
R155	1-216-049-00	METAL CHIP	1K	5%	1/10W
R156	1-216-295-91	METAL GLAZE	0	5%	1/10W
R157	1-216-295-91	METAL GLAZE	0	5%	1/10W
R158	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R159	1-216-117-00	METAL CHIP	680K	5%	1/10W
R160	1-216-041-00	METAL CHIP	470	5%	1/10W
R161	1-216-295-91	METAL GLAZE	0	5%	1/10W
R162	1-216-033-00	METAL CHIP	220	5%	1/10W
R163	1-216-097-00	METAL CHIP	100K	5%	1/10W
R164	1-216-049-00	METAL CHIP	1K	5%	1/10W
R165	1-216-295-91	METAL GLAZE	0	5%	1/10W
R166	1-216-049-00	METAL CHIP	1K	5%	1/10W
R167	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R169	1-216-049-00	METAL CHIP	1K	5%	1/10W
R170	1-216-115-00	METAL CHIP	560K	5%	1/10W
R174	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R175	1-216-021-00	METAL CHIP	68	5%	1/10W
R179	1-216-031-00	METAL CHIP	180	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R182	1-216-021-00	METAL CHIP	68	5%	1/10W
R189	1-216-041-00	METAL CHIP	470	5%	1/10W
R190	1-216-041-00	METAL CHIP	470	5%	1/10W
R191	1-216-041-00	METAL CHIP	470	5%	1/10W
R192	1-216-041-00	METAL CHIP	470	5%	1/10W
R193	1-216-081-00	METAL CHIP	22K	5%	1/10W
R194	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R197	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R199	1-216-095-00	METAL CHIP	82K	5%	1/10W
R200	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R201	1-216-073-00	METAL CHIP	10K	5%	1/10W
R202	1-216-049-00	METAL CHIP	1K	5%	1/10W
R203	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R204	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R205	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R206	1-216-676-11	METAL CHIP	11K	0.5%	1/10W
R207	1-216-672-11	METAL CHIP	7.5K	0.5%	1/10W
R208	1-216-635-11	METAL CHIP	220	0.5%	1/10W
R209	1-216-649-11	METAL CHIP	820	0.5%	1/10W
R210	1-216-049-00	METAL CHIP	1K	5%	1/10W
R211	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R212	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R213	1-216-657-11	METAL CHIP	1.8K	0.5%	1/10W
R214	1-216-676-11	METAL CHIP	11K	0.5%	1/10W
R215	1-216-672-11	METAL CHIP	7.5K	0.5%	1/10W
R216	1-216-073-00	METAL CHIP	10K	5%	1/10W
R217	1-216-685-11	METAL CHIP	27K	0.5%	1/10W
R218	1-216-685-11	METAL CHIP	27K	0.5%	1/10W
R219	1-216-295-91	METAL GLAZE	0	5%	1/10W
R220	1-216-073-00	METAL CHIP	10K	5%	1/10W
R221	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R224	1-216-649-11	METAL CHIP	820	0.5%	1/10W
R226	1-216-657-11	METAL CHIP	1.8K	0.5%	1/10W
R228	1-216-073-00	METAL CHIP	10K	5%	1/10W
R229	1-216-105-00	METAL CHIP	220K	5%	1/10W
R231	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R232	1-216-295-91	METAL GLAZE	0	5%	1/10W
R233	1-216-295-91	METAL GLAZE	0	5%	1/10W
R234	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R236	1-216-084-00	METAL CHIP	30K	5%	1/10W
R237	1-216-085-00	METAL CHIP	33K	5%	1/10W
R238	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R239	1-216-635-11	METAL CHIP	220	0.5%	1/10W
R240	1-216-649-11	METAL CHIP	820	0.5%	1/10W
R241	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R242	1-216-685-11	METAL CHIP	27K	0.5%	1/10W
R243	1-216-081-00	METAL CHIP	22K	5%	1/10W
R244	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R245	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R246	1-216-295-91	METAL GLAZE	0	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R247	1-216-073-00	METAL CHIP	10K	5%	1/10W
R248	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R250	1-216-295-91	METAL GLAZE	0	5%	1/10W
R251	1-216-657-11	METAL CHIP	1.8K	0.5%	1/10W
R252	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R253	1-216-084-00	METAL CHIP	30K	5%	1/10W
R254	1-216-295-91	METAL GLAZE	0	5%	1/10W
R255	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R256	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R257	1-216-085-00	METAL CHIP	33K	5%	1/10W
R258	1-216-073-00	METAL CHIP	10K	5%	1/10W
R259	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R262	1-216-649-11	METAL CHIP	820	0.5%	1/10W
R263	1-216-657-11	METAL CHIP	1.8K	0.5%	1/10W
R264	1-216-081-00	METAL CHIP	22K	5%	1/10W
R265	1-216-105-00	METAL CHIP	220K	5%	1/10W
R266	1-216-676-11	METAL CHIP	11K	0.5%	1/10W
R267	1-216-672-11	METAL CHIP	7.5K	0.5%	1/10W
R268	1-216-685-11	METAL CHIP	27K	0.5%	1/10W
R269	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R271	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R272	1-216-073-00	METAL CHIP	10K	5%	1/10W
R274	1-216-074-00	METAL CHIP	11K	5%	1/10W
R275	1-216-097-00	METAL CHIP	100K	5%	1/10W
R276	1-216-676-11	METAL CHIP	11K	0.5%	1/10W
R277	1-216-672-11	METAL CHIP	7.5K	0.5%	1/10W
R278	1-216-121-00	METAL CHIP	1M	5%	1/10W
R279	1-216-095-00	METAL CHIP	82K	5%	1/10W
R281	1-216-097-00	METAL CHIP	100K	5%	1/10W
R283	1-216-121-00	METAL CHIP	1M	5%	1/10W
R284	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R286	1-208-838-11	METAL GLAZE	220K	0.50%	1/10W
R287	1-208-798-11	METAL GLAZE	4.7K	0.50%	1/10W
R289	1-208-829-11	METAL GLAZE	91K	0.50%	1/10W
R290	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R291	1-208-824-11	METAL GLAZE	56K	0.50%	1/10W
R292	1-216-097-00	METAL CHIP	100K	5%	1/10W
R293	1-216-097-00	METAL CHIP	100K	5%	1/10W
R295	1-216-073-00	METAL CHIP	10K	5%	1/10W
R298	1-216-073-00	METAL CHIP	10K	5%	1/10W
R299	1-216-097-00	METAL CHIP	100K	5%	1/10W
R300	1-208-824-11	METAL GLAZE	56K	0.50%	1/10W
R301	1-216-295-91	METAL GLAZE	0	5%	1/10W
R303	1-216-097-00	METAL CHIP	100K	5%	1/10W
R304	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R305	1-208-824-11	METAL GLAZE	56K	0.50%	1/10W
R306	1-208-824-11	METAL GLAZE	56K	0.50%	1/10W
R307	1-208-837-11	METAL GLAZE	200K	0.50%	1/10W
R308	1-216-073-00	METAL CHIP	10K	5%	1/10W
R309	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R311	1-216-097-00	METAL CHIP	100K	5%	1/10W
R315	1-216-095-00	METAL CHIP	82K	5%	1/10W
R317	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R318	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R319	1-216-101-00	METAL CHIP	150K	5%	1/10W
R320	1-216-101-00	METAL CHIP	150K	5%	1/10W
R321	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R322	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R323	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R324	1-216-077-00	METAL CHIP	15K	5%	1/10W
R325	1-216-104-00	METAL CHIP	200K	5%	1/10W
R326	1-216-017-00	METAL CHIP	47	5%	1/10W
R327	1-216-049-00	METAL CHIP	1K	5%	1/10W
R328	1-216-049-00	METAL CHIP	1K	5%	1/10W
R329	1-216-049-00	METAL CHIP	1K	5%	1/10W
R330	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R331	1-216-041-00	METAL CHIP	470	5%	1/10W
R332	1-216-023-00	METAL CHIP	82	5%	1/10W
R333	1-216-077-00	METAL CHIP	15K	5%	1/10W
R334	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R335	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R336	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R340	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R341	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R399	1-412-390-21	INDUCTOR CHIP	0uH		
R400	1-216-097-00	METAL CHIP	100K	5%	1/10W
R401	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R402	1-216-045-00	METAL CHIP	680	5%	1/10W
R403	1-216-045-00	METAL CHIP	680	5%	1/10W
R404	1-216-093-00	METAL CHIP	68K	5%	1/10W
R405	1-216-107-00	METAL CHIP	270K	5%	1/10W
R406	1-216-099-00	METAL CHIP	120K	5%	1/10W
R407	1-216-075-00	METAL CHIP	12K	5%	1/10W
R408	1-216-083-00	METAL CHIP	27K	5%	1/10W
R409	1-216-049-00	METAL CHIP	1K	5%	1/10W
R410	1-216-101-00	METAL CHIP	150K	5%	1/10W
R411	1-216-077-00	METAL CHIP	15K	5%	1/10W
R412	1-216-101-00	METAL CHIP	150K	5%	1/10W
R413	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R414	1-216-075-00	METAL CHIP	12K	5%	1/10W
R415	1-216-085-00	METAL CHIP	33K	5%	1/10W
R416	1-216-103-91	METAL GLAZE	180K	5%	1/10W
R417	1-216-097-00	METAL CHIP	100K	5%	1/10W
R418	1-216-091-00	METAL CHIP	56K	5%	1/10W
R419	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R420	1-216-085-00	METAL CHIP	33K	5%	1/10W
R421	1-216-097-00	METAL CHIP	100K	5%	1/10W
R422	1-216-109-00	METAL CHIP	330K	5%	1/10W
R423	1-216-101-00	METAL CHIP	150K	5%	1/10W
R424	1-216-067-00	METAL CHIP	5.6K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R425	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R426	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R427	1-216-099-00	METAL CHIP	120K	5%	1/10W
R428	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R429	1-216-093-00	METAL CHIP	68K	5%	1/10W
R431	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R432	1-216-082-00	METAL GLAZE	24K	5%	1/10W
R433	1-216-100-00	METAL GLAZE	130K	5%	1/10W
R434	1-216-097-00	METAL CHIP	100K	5%	1/10W
R435	1-216-073-00	METAL CHIP	10K	5%	1/10W
R436	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R437	1-216-077-00	METAL CHIP	15K	5%	1/10W
R438	1-216-085-00	METAL CHIP	33K	5%	1/10W
R439	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R440	1-216-049-00	METAL CHIP	1K	5%	1/10W
R441	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R442	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R443	1-216-085-00	METAL CHIP	33K	5%	1/10W
R444	1-216-033-00	METAL CHIP	220	5%	1/10W
R445	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R446	1-216-081-00	METAL CHIP	22K	5%	1/10W
R447	1-216-081-00	METAL CHIP	22K	5%	1/10W
R448	1-216-092-00	METAL GLAZE	62K	5%	1/10W
R449	1-216-113-00	METAL CHIP	470K	5%	1/10W
R450	1-216-073-00	METAL CHIP	10K	5%	1/10W
R451	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R452	1-216-073-00	METAL CHIP	10K	5%	1/10W
R453	1-216-085-00	METAL CHIP	33K	5%	1/10W
R454	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R455	1-216-097-00	METAL CHIP	100K	5%	1/10W
R456	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R457	1-216-073-00	METAL CHIP	10K	5%	1/10W
R458	1-216-073-00	METAL CHIP	10K	5%	1/10W
R459	1-216-049-00	METAL CHIP	1K	5%	1/10W
R460	1-216-075-00	METAL CHIP	12K	5%	1/10W
R461	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R462	1-216-085-00	METAL CHIP	33K	5%	1/10W
R463	1-216-077-00	METAL CHIP	15K	5%	1/10W
R464	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R465	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R466	1-216-081-00	METAL CHIP	22K	5%	1/10W
R467	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R468	1-216-081-00	METAL CHIP	22K	5%	1/10W
R469	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R470	1-216-075-00	METAL CHIP	12K	5%	1/10W
R471	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R472	1-216-017-00	METAL CHIP	47	5%	1/10W
R473	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R474	1-216-003-11	METAL GLAZE	12	5%	1/10W
R475	1-216-081-00	METAL CHIP	22K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R476	1-216-146-00	METAL GLAZE	6.8	5%	1/8W
R477	1-216-079-00	METAL CHIP	18K	5%	1/10W
R478	1-216-109-00	METAL CHIP	330K	5%	1/10W
R479	1-216-093-00	METAL CHIP	68K	5%	1/10W
R480	1-216-095-00	METAL CHIP	82K	5%	1/10W
R481	1-216-369-00	METAL OXIDE	1	5%	2W F
R482	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R483	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R484	1-216-033-00	METAL CHIP	220	5%	1/10W
R485	1-216-041-00	METAL CHIP	470	5%	1/10W
R486	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R487	1-216-039-00	METAL CHIP	390	5%	1/10W
R488	1-216-047-00	METAL CHIP	820	5%	1/10W
R489	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R490	1-216-037-00	METAL CHIP	330	5%	1/10W
R491	1-216-146-00	METAL GLAZE	6.8	5%	1/8W
R492	1-216-073-00	METAL CHIP	10K	5%	1/10W
R493	1-216-095-00	METAL CHIP	82K	5%	1/10W
R494	1-216-079-00	METAL CHIP	18K	5%	1/10W
R495	1-216-079-00	METAL CHIP	18K	5%	1/10W
R496	1-216-099-00	METAL CHIP	120K	5%	1/10W
R497	1-216-099-00	METAL CHIP	120K	5%	1/10W
R498	1-216-077-00	METAL CHIP	15K	5%	1/10W
R499	1-216-099-00	METAL CHIP	120K	5%	1/10W
R500	1-216-073-00	METAL CHIP	10K	5%	1/10W
R501	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R502	1-216-111-00	METAL CHIP	390K	5%	1/10W
R503	1-216-113-00	METAL CHIP	470K	5%	1/10W
R504	1-208-808-11	METAL GLAZE	12K	0.50%	1/10W
R505	1-216-035-00	METAL CHIP	270	5%	1/10W
R506	1-208-810-11	METAL GLAZE	15K	0.50%	1/10W
R507	1-208-844-11	METAL GLAZE	390K	0.50%	1/10W
R508	1-216-049-00	METAL CHIP	1K	5%	1/10W
R509	1-208-816-11	METAL GLAZE	27K	0.50%	1/10W
R510	1-208-838-11	METAL GLAZE	220K	0.50%	1/10W
R511	1-208-806-11	METAL GLAZE	10K	0.50%	1/10W
R512	1-208-818-11	METAL GLAZE	33K	0.50%	1/10W
R513	1-208-830-11	METAL GLAZE	100K	0.50%	1/10W
R514	1-216-077-00	METAL CHIP	15K	5%	1/10W
R515	1-208-818-11	METAL GLAZE	33K	0.50%	1/10W
R516	1-216-085-00	METAL CHIP	33K	5%	1/10W
R517	1-216-105-00	METAL CHIP	220K	5%	1/10W
R518	1-216-081-00	METAL CHIP	22K	5%	1/10W
R520	1-216-073-00	METAL CHIP	10K	5%	1/10W
R521	1-216-045-00	METAL CHIP	680	5%	1/10W
R522	1-216-105-00	METAL CHIP	220K	5%	1/10W
R523	1-216-033-00	METAL CHIP	220	5%	1/10W
R524	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R525	1-216-073-00	METAL CHIP	10K	5%	1/10W
R526	1-216-065-00	METAL CHIP	4.7K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R527	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R528	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R529	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R530	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R531	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R532	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
⚠R533	1-212-950-00	FUSIBLE	4.7	5%	1/2W F
R534	1-216-105-00	METAL CHIP	220K	5%	1/10W
R535	1-216-093-00	METAL CHIP	68K	5%	1/10W
R536	1-216-095-00	METAL CHIP	82K	5%	1/10W
R537	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R538	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R539	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R540	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R541	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R542	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R545	1-216-049-00	METAL CHIP	1K	5%	1/10W
R546	1-216-049-00	METAL CHIP	1K	5%	1/10W
R547	1-216-049-00	METAL CHIP	1K	5%	1/10W
R548	1-216-073-00	METAL CHIP	10K	5%	1/10W
R549	1-216-105-00	METAL CHIP	220K	5%	1/10W
R550	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R552	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R553	1-216-029-00	METAL CHIP	150	5%	1/10W
R554	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R556	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R557	1-216-081-00	METAL CHIP	22K	5%	1/10W
R558	1-216-021-00	METAL CHIP	68	5%	1/10W
R559	1-216-097-00	METAL CHIP	100K	5%	1/10W
R560	1-216-049-00	METAL CHIP	1K	5%	1/10W
R561	1-216-049-00	METAL CHIP	1K	5%	1/10W
R562	1-216-049-00	METAL CHIP	1K	5%	1/10W
R563	1-216-049-00	METAL CHIP	1K	5%	1/10W
R564	1-216-049-00	METAL CHIP	1K	5%	1/10W
R565	1-216-121-00	METAL CHIP	1M	5%	1/10W
R566	1-216-049-00	METAL CHIP	1K	5%	1/10W
R568	1-216-049-00	METAL CHIP	1K	5%	1/10W
R569	1-216-049-00	METAL CHIP	1K	5%	1/10W
R570	1-216-049-00	METAL CHIP	1K	5%	1/10W
R571	1-216-049-00	METAL CHIP	1K	5%	1/10W
R572	1-216-049-00	METAL CHIP	1K	5%	1/10W
R573	1-216-049-00	METAL CHIP	1K	5%	1/10W
R574	1-216-049-00	METAL CHIP	1K	5%	1/10W
R575	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R576	1-216-049-00	METAL CHIP	1K	5%	1/10W
R577	1-216-049-00	METAL CHIP	1K	5%	1/10W
R578	1-216-049-00	METAL CHIP	1K	5%	1/10W
R579	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R580	1-216-049-00	METAL CHIP	1K	5%	1/10W
R581	1-216-049-00	METAL CHIP	1K	5%	1/10W

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remarks
R582	1-216-049-00	METAL CHIP	1K	5%	1/10W
R583	1-216-049-00	METAL CHIP	1K	5%	1/10W
R584	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R585	1-216-049-00	METAL CHIP	1K	5%	1/10W
R586	1-216-049-00	METAL CHIP	1K	5%	1/10W
R587	1-216-049-00	METAL CHIP	1K	5%	1/10W
R588	1-216-049-00	METAL CHIP	1K	5%	1/10W
R589	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R590	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R591	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R592	1-216-049-00	METAL CHIP	1K	5%	1/10W
R593	1-208-795-11	METAL GLAZE	3.6K	0.50%	1/10W
R594	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R595	1-216-049-00	METAL CHIP	1K	5%	1/10W
R597	1-216-049-00	METAL CHIP	1K	5%	1/10W
R598	1-216-295-91	METAL GLAZE	0	5%	1/10W
R604	1-216-049-00	METAL CHIP	1K	5%	1/10W
R605	1-216-295-91	METAL GLAZE	0	5%	1/10W
R606	1-216-037-00	METAL CHIP	330	5%	1/10W
R608	1-216-049-00	METAL CHIP	1K	5%	1/10W
R609	1-216-049-00	METAL CHIP	1K	5%	1/10W
R610	1-216-049-00	METAL CHIP	1K	5%	1/10W
R611	1-216-049-00	METAL CHIP	1K	5%	1/10W
R612	1-216-295-91	METAL GLAZE	0	5%	1/10W
R613	1-216-049-00	METAL CHIP	1K	5%	1/10W
R614	1-216-049-00	METAL CHIP	1K	5%	1/10W
R615	1-216-049-00	METAL CHIP	1K	5%	1/10W
R616	1-216-049-00	METAL CHIP	1K	5%	1/10W
R617	1-216-049-00	METAL CHIP	1K	5%	1/10W
R618	1-216-049-00	METAL CHIP	1K	5%	1/10W
R619	1-216-073-00	METAL CHIP	10K	5%	1/10W
R620	1-216-049-00	METAL CHIP	1K	5%	1/10W
R621	1-216-049-00	METAL CHIP	1K	5%	1/10W
R622	1-216-049-00	METAL CHIP	1K	5%	1/10W
R623	1-216-049-00	METAL CHIP	1K	5%	1/10W
R625	1-216-049-00	METAL CHIP	1K	5%	1/10W
R626	1-216-073-00	METAL CHIP	10K	5%	1/10W
R628	1-216-041-00	METAL CHIP	470	5%	1/10W
R630	1-216-049-00	METAL CHIP	1K	5%	1/10W
R632	1-216-049-00	METAL CHIP	1K	5%	1/10W
R633	1-216-097-00	METAL CHIP	100K	5%	1/10W
R634	1-216-073-00	METAL CHIP	10K	5%	1/10W
R635	1-216-049-00	METAL CHIP	1K	5%	1/10W
R636	1-216-049-00	METAL CHIP	1K	5%	1/10W
R637	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R638	1-216-081-00	METAL CHIP	22K	5%	1/10W
R639	1-216-081-00	METAL CHIP	22K	5%	1/10W
R641	1-216-295-91	METAL GLAZE	0	5%	1/10W
R642	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R643	1-216-049-00	METAL CHIP	1K	5%	1/10W
R644	1-216-295-91	METAL GLAZE	0	5%	1/10W
R645	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R646	1-216-073-00	METAL CHIP	10K	5%	1/10W
R647	1-216-073-00	METAL CHIP	10K	5%	1/10W
R648	1-216-073-00	METAL CHIP	10K	5%	1/10W
R649	1-216-025-00	METAL CHIP	100	5%	1/10W
R650	1-216-101-00	METAL CHIP	150K	5%	1/10W
R651	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R801	1-216-105-00	METAL CHIP	220K	5%	1/10W
R802	1-216-105-00	METAL CHIP	220K	5%	1/10W
R803	1-216-295-91	METAL GLAZE	0	5%	1/10W
R804	1-216-097-00	METAL CHIP	100K	5%	1/10W
R805	1-216-117-00	METAL CHIP	680K	5%	1/10W
R806	1-216-085-00	METAL CHIP	33K	5%	1/10W
R807	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R808	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R809	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R810	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R812	1-216-295-91	METAL GLAZE	0	5%	1/10W
R813	1-216-295-91	METAL GLAZE	0	5%	1/10W
R814	1-216-295-91	METAL GLAZE	0	5%	1/10W
R815	1-216-109-00	METAL CHIP	330K	5%	1/10W
R816	1-216-043-00	METAL CHIP	560	5%	1/10W
R850	1-216-077-00	METAL CHIP	15K	5%	1/10W
R900	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R901	1-208-808-11	METAL GLAZE	12K	0.50%	1/10W
R902	1-208-808-11	METAL GLAZE	12K	0.50%	1/10W
R903	1-216-021-00	METAL CHIP	68	5%	1/10W
R904	1-216-021-00	METAL CHIP	68	5%	1/10W
R905	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R906	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R907	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R912	1-216-095-00	METAL CHIP	82K	5%	1/10W
R913	1-216-083-00	METAL CHIP	27K	5%	1/10W
R914	1-216-049-00	METAL CHIP	1K	5%	1/10W
R915	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R916	1-216-077-00	METAL CHIP	15K	5%	1/10W
R917	1-216-047-00	METAL CHIP	820	5%	1/10W
R918	1-216-045-00	METAL CHIP	680	5%	1/10W
R923	1-216-022-00	METAL CHIP	75	5%	1/10W
R950	1-216-049-00	METAL CHIP	1K	5%	1/10W
R951	1-216-097-00	METAL CHIP	100K	5%	1/10W

< VARIABLE RESISTOR >

RV001	1-223-239-11	RES, ADJ, CARBON 10K
RV002	1-223-239-11	RES, ADJ, CARBON 10K
RV401	1-238-602-11	RES, ADJ, CARBON 47K
RV402	1-238-602-11	RES, ADJ, CARBON 47K
RV501	1-223-240-11	RES, ADJ, CARBON 22K

< SWITCH >

S201	1-553-725-21	SWITCH, SLIDE (ATT)

Ref. No.	Part No.	Description			Remarks
		< TEST PIN >			
TP501	1-537-676-11	PIN, TERMINAL			
		< VIBRATOR >			
X201	1-567-908-11	VIBRATOR, CRYSTAL (16.934MHz)			
X501	1-567-900-11	OSCILLATOR, CRYSTAL (14.31818MHz)			
**********					
	A-6421-956-A	MD-703 BOARD, COMPLETE			
		**********			
		(Ref.No.2,000 Seriese)			
	3-953-262-01	HOLDER, LED			
		< CAPACITOR >			
C431	1-126-947-11	ELECT	47uF	20% 35V	
		< CONNECTOR >			
* CN431	1-764-595-21	CONNECTOR, FPC 14P			
CN432	1-506-470-11	PIN, CONNECTOR 5P			
CN433	1-564-014-11	PIN, CONNECTOR 4P			
CN434	1-506-468-11	PIN, CONNECTOR 3P			
		< DIODE >			
D431	8-719-912-39	LED SLR-932A			
D432	8-729-020-74	DIODE GP1S24			
D433	8-729-020-74	DIODE GP1S24			
D434	8-729-020-74	DIODE GP1S24			
		< IC >			
IC431	8-759-927-46	IC SN74HC00ANS (DETECTOR CONTROL)			
		< JUMPER RESISTOR >			
JR413	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR414	1-216-295-91	METAL GLAZE	0	5% 1/10W	
JR431	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR432	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR433	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR435	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR437	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR438	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR439	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR440	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR441	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR442	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR443	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR444	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR445	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR446	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR447	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR448	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR449	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR450	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR451	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR452	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR453	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR454	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR455	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR456	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR457	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR458	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR460	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR461	1-216-296-00	METAL CHIP	0	5% 1/8W	
JR462	1-216-296-00	METAL CHIP	0	5% 1/8W	
		< RESISTOR >			
R431	1-216-033-00	METAL CHIP	220	5% 1/10W	
R432	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R433	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R434	1-216-045-00	METAL CHIP	680	5% 1/10W	
R435	1-216-099-00	METAL CHIP	120K	5% 1/10W	
R436	1-216-039-00	METAL CHIP	390	5% 1/10W	
R437	1-216-099-00	METAL CHIP	120K	5% 1/10W	
R438	1-216-095-00	METAL CHIP	82K	5% 1/10W	
R439	1-216-095-00	METAL CHIP	82K	5% 1/10W	
		< SWITCH >			
S431	1-692-440-11	SWITCH, PUSH (TILT)			
**********					
	A-6421-953-A	MT-702 BOARD, COMPLETE			
		**********			
		(Ref.No.4,000 Seriese)			
		< CAPACITOR >			
C471	1-161-063-00	CERAMIC	0.1uF	10% 50V	
		< CONNECTOR >			
* CN471	1-695-105-11	PIN, CONNECTOR (PC BOARD) 3P BOARD			
**********					

Ref. No.	Part No.	Description			Remarks
*	A-6423-169-A	PS-716 BOARD, COMPLETE			
		**********			
		(Ref. No. 6,000 Seriese)			
⚠	1-533-223-11	HOLDER, FUSE			
	7-685-646-81	SCREW +BVTP 3X8 TYPE2			
		< CAPACITOR >			
C031	1-126-948-11	ELECT	100uF	20%	35V
C032	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C034	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C035	1-126-941-11	ELECT	470uF	20%	25V
C036	1-126-944-11	ELECT	3300uF	20%	25V
C037	1-126-946-11	ELECT	6800uF	20%	25V
C038	1-126-944-11	ELECT	3300uF	20%	25V
C039	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C040	1-124-997-11	ELECT	470uF	20%	10V
C041	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C042	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C043	1-124-997-11	ELECT	470uF	20%	10V
C044	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C045	1-124-563-11	ELECT	2200uF	20%	25V
C046	1-124-557-11	ELECT	1000uF	20%	25V
C047	1-124-557-11	ELECT	1000uF	20%	25V
C051	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C052	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C054	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C055	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C056	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C058	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C059	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C060	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C061	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C062	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C063	1-124-122-11	ELECT	100uF	20%	50V
C064	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C701	1-126-916-11	ELECT	1000uF	20%	6.3V
C702	1-126-916-11	ELECT	1000uF	20%	6.3V
C703	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C704	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C706	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C707	1-126-964-11	ELECT	10uF	20%	50V
C708	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C709	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C710	1-124-927-11	ELECT	4.7uF	20%	100V
C711	1-126-916-11	ELECT	1000uF	20%	6.3V
C712	1-126-916-11	ELECT	1000uF	20%	6.3V
C713	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C714	1-126-966-11	ELECT	33uF	20%	16V
C718	1-126-948-11	ELECT	100uF	20%	35V

Ref. No.	Part No.	Description	Remarks
		< CONNECTOR >	
* CN030	1-564-029-00	PIN, CONNECTOR 4P	
CN031	1-506-483-21	PIN, CONNECTOR 4P	
CN051	1-506-487-11	PIN, CONNECTOR 8P	
CN052	1-564-506-11	PLUG, CONNECTOR 3P	
CN053	1-506-483-21	PIN, CONNECTOR 4P	
CN055	1-506-485-11	PIN, CONNECTOR 6P	
		< DIODE >	
⚠D031	8-719-200-82	DIODE 11ES2	
⚠D032	8-719-200-82	DIODE 11ES2	
D033	8-719-911-19	DIODE 1SS119	
⚠D034	8-719-025-17	DIODE D3SBA10-4100	
⚠D035	8-719-911-19	DIODE 1SS119	
D036	8-719-980-78	DIODE ERA83-006	
D037	8-719-980-78	DIODE ERA83-006	
D038	8-719-980-78	DIODE ERA83-006	
D039	8-719-980-78	DIODE ERA83-006	
D051	8-719-980-78	DIODE ERA83-006	
D052	8-719-980-78	DIODE ERA83-006	
D053	8-719-200-82	DIODE 11ES2	
D054	8-719-200-82	DIODE 11ES2	
D055	8-719-911-19	DIODE 1SS119	
D056	8-719-911-19	DIODE 1SS119	
D057	8-719-911-19	DIODE 1SS119	
D058	8-719-109-85	DIODE RD5.1ESB2	
D059	8-719-109-75	DIODE RD4.3ESB2	
D060	8-719-911-19	DIODE 1SS119	
⚠D061	8-719-503-40	DIODE S3V40	
D701	8-719-980-78	DIODE ERA83-006	
D702	8-719-980-78	DIODE ERA83-006	
		< IC >	
⚠IC031	8-759-231-53	IC TA7805S (+5V REG)	
IC032	8-759-199-82	IC uPC24M08HF (+8V REG)	
IC033	8-759-012-70	IC MC7908CT (-8V REG)	
IC051	8-759-509-91	IC XRA10393F (PWM CONVERSION)	
IC052	8-759-100-96	IC uPC4558G2 (PWM AMP/CURRENT FEED BACK)	
⚠IC701	8-759-946-09	IC FA7611M (REG)	
		< COIL >	
L051	1-424-219-11	COIL, CHOKE 300uH	
L701	1-424-219-11	COIL, CHOKE 300uH	
L702	1-412-525-21	INDUCTOR 10uH	
L703	1-412-537-31	INDUCTOR 100uH	
L704	1-424-219-11	COIL, CHOKE 300uH	
L705	1-412-525-21	INDUCTOR 10uH	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description				Remarks
		< IC LINK >				
⚠PS051	1-532-675-00	LINK, IC 1.5A				
⚠PS052	1-532-675-00	LINK, IC 1.5A				
⚠PS053	1-532-843-21	LINK, IC				
⚠PS054	1-532-843-21	LINK, IC				
		< TRANSISTOR >				
Q031	8-729-141-75	TRANSISTOR	2SD596DV345			
⚠Q051	8-729-117-11	TRANSISTOR	2SB1151-L			
⚠Q052	8-729-019-31	TRANSISTOR	2SC4596E			
⚠Q053	8-729-117-11	TRANSISTOR	2SB1151-L			
⚠Q054	8-729-019-31	TRANSISTOR	2SC4596E			
Q055	8-729-119-78	TRANSISTOR	2SC2785-HFE			
Q056	8-729-216-22	TRANSISTOR	2SA1162-G			
Q058	8-729-230-49	TRANSISTOR	2SC2712-YG			
Q059	8-729-216-22	TRANSISTOR	2SA1162-G			
Q060	8-729-230-49	TRANSISTOR	2SC2712-YG			
Q061	8-729-119-76	TRANSISTOR	2SA1175-HFE			
⚠Q701	8-729-925-37	TRANSISTOR	2SB891			
⚠Q702	8-729-925-37	TRANSISTOR	2SB891			
		< RESISTOR >				
⚠R031	1-212-867-00	FUSIBLE	27	5%	1/4W	F
R032	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
⚠R033	1-216-426-11	METAL OXIDE	82	5%	1W	F
R034	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R035	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R051	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R052	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R053	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R054	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R055	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R056	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R057	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R061	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R062	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R063	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R064	1-247-750-11	CARBON	680	5%	1/2W	
R065	1-247-750-11	CARBON	680	5%	1/2W	
R066	1-216-049-00	METAL CHIP	1K	5%	1/10W	
⚠R067	1-216-369-00	METAL OXIDE	1	5%	2W	F
R068	1-208-821-11	METAL GLAZE	43K	0.50%	1/10W	
R069	1-208-822-11	METAL GLAZE	47K	0.50%	1/10W	
R070	1-208-821-11	METAL GLAZE	43K	0.50%	1/10W	
R071	1-208-822-11	METAL GLAZE	47K	0.50%	1/10W	
R072	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R073	1-216-073-00	METAL CHIP	10K	5%	1/10W	
⚠R074	1-215-866-11	METAL OXIDE	330	5%	1W	F
R075	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R076	1-247-750-11	CARBON	680	5%	1/2W	
R077	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R078	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R079	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R080	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R701	1-208-790-11	METAL GLAZE	2.2K	0.50%	1/10W	
R702	1-208-814-11	METAL GLAZE	22K	0.50%	1/10W	
R703	1-216-035-00	METAL CHIP	270	5%	1/10W	
R704	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R705	1-216-043-00	METAL CHIP	560	5%	1/10W	
R706	1-216-043-00	METAL CHIP	560	5%	1/10W	
R707	1-208-822-11	METAL GLAZE	47K	0.50%	1/10W	
R708	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R709	1-216-119-00	METAL CHIP	820K	5%	1/10W	
R710	1-216-043-00	METAL CHIP	560	5%	1/10W	
R711	1-208-830-11	METAL GLAZE	100K	0.50%	1/10W	
R712	1-208-814-11	METAL GLAZE	22K	0.50%	1/10W	
R713	1-208-794-11	METAL GLAZE	3.3K	0.50%	1/10W	
R714	1-208-805-11	METAL GLAZE	9.1K	0.50%	1/10W	
R715	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R716	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R717	1-216-029-00	METAL CHIP	150	5%	1/10W	
		< RELAY >				
⚠RY031	1-515-833-11	RELAY				
**********						
*	A-6423-174-A	PW-710 BOARD, COMPLETE				
		**********				
		(Ref.No.7,000 Seriese)				
		< CAPACITOR >				
C201	1-163-038-00	CERAMIC CHIP	0.1uF			25V
		< CONNECTOR >				
CN201	1-506-487-11	PIN, CONNECTOR 8P				
		< DIODE >				
D201	8-719-046-97	DIODE	GL8ED5 (POWER)			
D202	8-719-042-48	DIODE	SLR-33DC3F (SELECT)			
D203	8-719-042-48	DIODE	SLR-33DC3F (SURROUND MODE)			
D204	8-719-042-48	DIODE	SLR-33DC3F (LINE IN)			
		< IC >				
IC201	8-741-810-59	IC	SBX1810-59 (REMOTE CONTROL)			
		< TRANSISTOR >				
Q201	8-729-901-04	TRANSISTOR	DTA114EK			
Q202	8-729-901-04	TRANSISTOR	DTA114EK			
Q203	8-729-901-04	TRANSISTOR	DTA114EK			
Q204	8-729-901-04	TRANSISTOR	DTA114EK			

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remarks
		< RESISTOR >			
R201	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R202	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R203	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R204	1-216-037-00	METAL CHIP	330	5%	1/10W
R205	1-216-037-00	METAL CHIP	330	5%	1/10W
R206	1-216-081-00	METAL CHIP	22K	5%	1/10W
R207	1-216-037-00	METAL CHIP	330	5%	1/10W
R208	1-216-037-00	METAL CHIP	330	5%	1/10W
R209	1-216-037-00	METAL CHIP	330	5%	1/10W
		< SWITCH >			
S201	1-572-946-11	SWITCH, TACTIL (POWER)			
S202	1-572-946-11	SWITCH, TACTIL (OPEN/CLOSE)			
S203	1-572-946-11	SWITCH, TACTIL (LINE IN)			
S204	1-572-946-11	SWITCH, TACTIL (VOCAL)			
S205	1-572-946-11	SWITCH, TACTIL (SELECT)			
**********					
	A-6421-954-A	SW-719 BOARD, COMPLETE			
		**********			
		(Ref.No.4,000 Seriese)			
		< CONNECTOR >			
* CN481	1-566-779-11	PIN, CONNECTOR (PC BOARD) 4P BOARD			
		< SWITCH >			
S481	1-692-439-11	SWITCH, PUSH (LOAD/CHUCK)			
**********					
*	A-6423-172-A	SW-728 BOARD, COMPLETE			
		**********			
		(Ref.No.7,000 Seriese)			
		< CONNECTOR >			
CN101	1-506-484-11	PIN, CONNECTOR 5P			
		< DIODE >			
D103	8-719-992-30	LED SLR-305MC3F (AUTO RESUME)			
D104	8-719-992-30	LED SLR-305MC3F (AUTO RESUME)			
		< TRANSISTOR >			
Q103	8-729-901-04	TRANSISTOR DTA114EK			
		< RESISTOR >			
R103	1-216-037-00	METAL CHIP	330	5%	1/10W
R104	1-216-037-00	METAL CHIP	330	5%	1/10W
R105	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R106	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R107	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R108	1-216-081-00	METAL CHIP	22K	5%	1/10W
R109	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R110	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R111	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
		< SWITCH >			
S101	1-572-946-11	SWITCH, TACTIL (SIDE B)			
S102	1-572-946-11	SWITCH, TACTIL (▷)			
S103	1-572-946-11	SWITCH, TACTIL (SIDE A)			
S104	1-572-946-11	SWITCH, TACTIL (▮▮)			
S105	1-572-946-11	SWITCH, TACTIL (■)			
S106	1-572-946-11	SWITCH, TACTIL (DOWN)			
S107	1-572-946-11	SWITCH, TACTIL (UP)			
S108	1-572-946-11	SWITCH, TACTIL (⏮)			
S109	1-572-946-11	SWITCH, TACTIL (⏭)			
**********					
*	A-6423-170-A	TR-718 BOARD, COMPLETE			
		**********			
		(Ref.No.5,000 Seriese)			
⚠	1-533-223-11	HOLDER, FUSE			
		< CAPACITOR >			
⚠C001	1-104-705-11	FILM	0.1uF	20%	250V
		< CONNECTOR >			
⚠CN001	1-564-419-11	HEADER, SPRING (POWER) 2P			
		< TRANSFORMER >			
⚠T001	1-423-556-11	TRANSFORMER, POWER			
⚠T002	1-406-884-11	FILTER, LINE			
**********					
*	A-6423-173-A	VS-707 BOARD, COMPLETE			
		**********			
		(Ref.No.9,000 Seriese)			
⚠	1-533-223-11	HOLDER, FUSE			
		< SWITCH >			
⚠S021	1-570-615-11	SELECTOR, POWER VOLTAGE			
**********					

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remarks
		MISCELLANEOUS	
		**********	
211	1-751-083-11	CABLE, FLEXIBLE FLAT (18 CORE)	
221	1-765-530-11	CABLE, FLEXIBLE FLAT (14 CORE)	
⚠CP1	1-575-912-21	CORD, POWER	
⚠F31	1-532-299-00	FUSE, TIME-LAG (5A/250V)	
⚠F32	1-532-299-00	FUSE, TIME-LAG (5A/250V)	
⚠F1	1-532-215-00	FUSE, TIME-LAG (0.8A/250V)	
M461	1-541-930-11	MOTOR, DC (TILT)	
M471	X-3942-963-1	MOTOR ASSY (LOADING MOTOR)	
M901	1-698-109-11	MOTOR, DD (SPINDLE)	
**********			
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-467-603-51	REMOTE COMMANDER (RMT-M24A)	
⚠	1-569-008-11	ADAPTER, CONVERSION 2P	
	1-751-271-11	CORD, CONNECTION (A/V CABLE) (1.5m)	
	3-758-251-11	MANUAL, INSTRUCTION (ENGLISH, CHINESE, SPANISH)	
*	3-958-652-01	INDIVIDUAL CARTON	
*	3-958-653-01	CUSHION (UPPER)	
*	3-958-654-01	CUSHION (LOWER)	
**********			

Ref. No.	Part No.	Description	Remarks
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-671-155-01	STEEL BALL 3.0	
#3	7-624-105-04	STOP RING 2.3, TYPE -E	
#4	7-682-546-04	SCREW +PTT 3X5 (S)	
#6	7-682-645-01	SCREW +PS 3X4	
#7	7-685-647-79	SCREW +BVTP 3X10 TYPE2	
#8	7-627-553-48	SCREW, PRECISION +P 2X4	
#9	7-628-253-05	SCREW +PS 2X4	
#10	7-621-759-35	+PSW, 2.6X5	
#11	7-688-003-11	W 3, MIDDLE	
#12	7-624-190-81	STOP RING 2, TYPE-CS	
#13	7-682-946-09	SCREW +PSW 3X5	
#14	7-621-759-65	+PSW, 2.6X8	
#15	7-685-661-14	SCREW +BVTP 4X12 TYPE2 IT-3	
#16	7-624-102-04	STOP RING 1.5, TYPE -E	
#17	7-621-770-87	SCREW +B 2.6X5	
#18	7-685-103-19	SCREW +P 2X5 TYPE2 SLIT	
#19	7-685-158-19	SCREW +P 4X6 TYPE2 NON-SLIT	
#20	7-623-210-22	SW 4, TYPE 2	
#21	7-685-648-79	SCREW +BVTP 3X12 TYPE2	
#22	7-685-646-81	SCREW +BVTP 3X8 TYPE2	
#23	7-684-220-02	NUT 3, HEXAGON CAP	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

6-1. SYSTEM CONTROL MICROPROCESSOR PIN FUNCTION (MB-712 BOARD IC501 MB89094PF-G-117)

PIN NO.	PIN NAME	I/O	FUNCTION
1	N.C		NOT USED. OPEN
2	CLK32	I	CRYSTAL OSCILLATOR (32 kHz) INPUT
3	GND	I	GND
4	GND	I	GND
5	2FSC	I	2 fsc (7.159 MHz) INPUT
6	N.C		NOT USED. OPEN
7	Vss	I	GND
8	$\overline{MRST}$	I	RESET INPUT TERMINAL (L: RESET)
9	$\overline{FREQ}$	I	PHILLIPS CODE (FRAME NO.) READ OUT ENABLE INPUT
10	FOACK	O	PHILLIPS CODE, SUBQ (SUB CODE) DATA OUTPUT CONTROL (H. DATA OUTPUT)
11	FQSEL	O	PHILLIPS CODE/SUBQ DATA SELECT (L: SUBQ)
12	JPCTRL	O	1 TRACK JUMP (1TJ)/MULTI TRACK JUMP (MTJ) SELECT SIGNAL OUTPUT (H: 1TJ)
13	SPLOCK	I	SPINDLE SERVO LOCK SIGNAL (H. DURING SPINDLE SERVO IS LOCKING)
14	TBCHOLDIN	O	CHROMA TBC CONTROL SIGNAL OUTPUT
15	SCOR	I	H WHEN SUB CODE SYNC IS DETECTED
16	$\overline{PB\ V}$	I	PLAYBACK V SYNC SIGNAL INPUT
17	$\overline{REF\ V}$	I	REFERENCE V SYNC SIGNAL
18	ALT	O	INTERNAL A REGISTER LATCH OF EXPANSION OUTPUT PORT IC (IC502 ON MB-712 BOARD) OUTPUT
19	BLT	O	INTERNAL B REGISTER LATCH OF EXPANSION OUTPUT PORT IC (IC502 ON MB-712 BOARD) OUTPUT
20	$\overline{BUSY}$	I	COMMUNICATION ENABLE SIGNAL FROM MODE CONTROL MICROPROCESSOR (H : COMMUNICATION ENABLE)
21 – 24	N.C		NOT USED. OPEN
25	CLSCS	O	CHIP SELECT SIGNAL OUTPUT FOR CLS DT (PIN ㉘) SIGNAL
26	SPDLPLS	O	SPINDLE PULSE DRIVE SIGNAL OUTPUT (H SPINDLE FREE-RUN)
27	TBRKMON	O	SERVO IC BRAKE MONITOR (H BRAKE ON). NOT USED
28	PULL UP +5V	I	+5 V
29	CLSDT	I	CLV SCAN V SYNC COUNTER SERIAL DATA FROM IC502 INPUT. NORMALLY L. WHEN CLS CS (PIN ㉗) IS H, DATA IS IN. CLOCK IS SET CK (PIN ㉙)
30	SETDT	O	SERIAL DATA OUTPUT TO DSP (DIGITAL SIGNAL PROCESSOR) IC (IC203 ON MB-712 BOARD) AND EXPANSION OUTPUT PORT IC
31	SETCK	O	SERIAL TRANSFERRING CLOCK TO DSP IC AND IC502
32	SPDLFG1	I	SPINDLE FG INPUT 1 (1 ROTATION: 12WAVES)
33	CG V	I	CGV SYNC SIGNAL
34	LD SEARCH	O	SPINDLE SERVO CONTROL OUTPUT (H: DURING LD SEARCHING)
35	SPDL F/R	O	SPINDLE ROTATING DIRECTION SIGNAL OUTPUT (H: FWD)
36	AUX SEL	O	H WHEN THERE IS AUXILIARY INPUT. NOT USED. FIXED TO L
37	JMP TRIG	O	TRACK JUMP TRIGGER PULSE OUTPUT
38	ANALOG	O	AUDIO ANALOGUE/DIGITAL SELECT (H: ANALOGUE. L: DIGITAL)
39	CDG	I	NOT USED. CONNECTED TO GND
40	CDG MUTE	O	NOT USED. OPEN.
41	MTJ	I	TRACKING PULSE OUTPUT FOR MTJ. NORMALLY INPUT, OUTPUT DURING JUMPING TRACKS (L: FWD)
42	MTF ON/OFF	O	MTF CORRECTION ON/OFF SIGNAL (H: MTF ON)
43	$\overline{TRK\ OFF}$	O	PUT OFF SERVO IC TRACKING CONTROL (L: TRACKING OFF)
44	N.C	O	NOT USED. OPEN
45	GMUTE	O	ON CLV SCAN, GRAY PICTURE MUTE CONTROL OUTPUT (L: PLAYBACK PICTURE) (H: GRAY PICTURE)
46	N.C		NOT USED. OPEN
47	$\overline{CAV}$	O	H: CAV DISC, L: OTHERS OR UNIDENTIFIED
48	POK	I	FOCUS LOCK SIGNAL INPUT (H: FOCUS LOCK)
49	Vcc	I	+5 V POWER SUPPLY
50	$\overline{BUSY}$	I	COMMUNICATION ENABLE SIGNAL FROM MODE CONTROL MICROPROCESSOR (H: COMMUNICATION ENABLE)
51	$\overline{TV/DISC}$	O	RF TV/DISC SELECT (H: TV, L: DISC). NOT USED. OPEN
52	SLED FWD	O	SLED FWD FORCED MOVE SIGNAL OUTPUT FROM PORT (H. FWD MOVE)
53	SLED REV	O	SLED REV FORCED MOVE SIGNAL OUTPUT FROM PORT (H: REV MOVE)
54	$\overline{MMICS}$	O	SERIAL COMMUNICATION CHIP SELECT SIGNAL OUTPUT TO MODE CONTROL MICROPROCESSOR
55	LOADING	O	TRAY LOADING DRIVE
56	UN LOADING	O	TRAY EJECT DRIVE
57	N.C		NOT USED. OPEN
58	Vss	I	GND
59	LINE MUTE	O	AUDIO OUTPUT MUTE SIGNAL OUTPUT (H: MUTE)
60	SLED SPEED	O	SLED DRIVE SPEED CHANGE (L: SLOW)
61	$\overline{SV\ DSP\ RST}$	O	RESET OUTPUT TO (L: RESET) SERVO IC (IC401 ON MB-712 BOARD), DSP IC AND D/A CONVERTER (IC201 ON MB-712 BOARD).
62	LD ON	O	LASER DIODE ON/OFF SIGNAL (H: ON EMITTING)
63	$\overline{CD/LD\ CDV}$	O	L: PLAYING CD OR AUDIO PART OF CDV H: OTHERS
64	SLED MODE	O	SLED CONTROL OUTPUT
65	SIDE A/B	O	TILT SERVO SIDE SELECT (A: H, B: L)
66	$\overline{T}$/H SV	O	TILT/HIGHT SELECT (L. TILT)
67	LCSW1	I	LOADING/CHUCKING POSITION SENSOR INPUT 1
68	$\overline{LD\ LED}$	O	LED EMITTING SIGNAL FOR DISC DISCRIMINATION
69	LCSW3	I	LOADING/CHUCKING POSITION SENSOR INPUT 2
70	LCSW2	I	LOADING/CHUCKING POSITION SENSOR INPUT 3
71	SPDL FG2	I	SPINDLE FG INPUT 2
72	TILT LIMIT	I	TILT UP/DOWN LIMIT SW INPUT
73	TILT CTR	I	TILT CENTOR POSITION SW INPUT
74	MECH SI	I	32 BYTE SERIAL TRANFERRING DATA INPUT
75, 76	N.C		NOT USED. OPEN
77	MECH SI	I	32 BYTE SERIAL TRANFERRING DATA OUTPUT. SERIAL DATA INPUT FROM MODE CONTROL MICROPROCESSOR
78	MECH SO	O	32 BYTE SERIAL TRANFERRING DATA INPUT. SERIAL DATA OUTPUT TO MODE CONTROL MICROPROCESSOR
79	MECH CLK	O	32 BYTE SERIAL TRANFERRING CLOCK
80	T CNT	I	JUMPING TRACKS COUNTING SIGNAL INPUT. NOT USED
81, 82	N.C		NOT USED OPEN
83	AVss	I	GND
84	LDDET	I	A/D INPUT THERE IS DISC OR NOT. 8/12 INCH DETECTION
85	CDV/FRLMT	I	A/D INPUT SLED POSITION INFORMATION (CDV)
86	CD ABLD	I	A/D INPUT SLED POSITION INFORMATION (CD. ALD, BLD)
87	INLIMIT	I	A/D INPUT SLED POSITION INFORMATION (INLIMIT)
88	$\overline{DSPLT}$	O	LATCH SIGNAL FOR DSP IC OUTPUT
89	MUTG	O	DSP MUTE SIGNAL (H: MUTE)
90	LOCK	I	FRME SYNC (EFM) LOCK SIGNAL (Hi LOCK)
91	SENSE	I	VARIOUS SENSE INPUT SIGNAL FROM DSP
92	AVcc	I	+5 V POWER SUPPLY
93	$\overline{EMP\ ON}$	O	EMPHASIS SELECT SIGNAL OUTPUT (L: EMPHASIS ON)
94	N.C	O	NOT USED. OPEN
95	A MUTE 2	O	L CH AUDIO OUTPUT MODE SELECT *
96	A MUTE 1	O	R CH AUDIO OUTPUT MODE SELECT *
97	$\overline{CX}$	O	CX ON/OFF CONTROL OUTPUT (L: CX ON)
98	N.C		NOT USED. OPEN
99	$\overline{DSPSEL}$	O	SELECTS COMMUNICATION WITH DSP (L. CONNECT, H: SEPARATE)
100	Vcc	I	POWER SUPPLY TERMINAL (+5 V)

* AUDIO OUTPUT MODE SELECT

A MUTE 1		L	L	H	H
A MUTE 2		L	H	L	H
MODE		STEREO	MONO (L)	MONO (R)	MUTE
AUDIO OUTPUT	L	L/CH1	L/CH1	R/CH2	MUTE
	R	R/CH2			

6-2. EXPANSION OUTPUT PORT IC PIN FUNCTION (MB-712 BOARD IC502 MB606F06)

PIN NO.	PIN NAME	I/O	FUNCTION
1	SP OFF	O	SPINDLE MOTOR ON/OFF SIGNAL OUTPUT (H: SPINDLE MOTOR ON)
2	Vss		GND
3	TBC MUT	O	TBC MUTE SIGNAL OUTPUT
4	TBC REFH	O	REFERENCE HORIZONTAL SYNC. SIGNAL FOR TBC OUTPUT
5	PBCS	I	PB COMPOSITE V, H SYNC. SIGNAL INPUT
6	SP RHO	O	REFERENCE H SYNC. SIGNAL FOR SPINDLE SERVO OUTPUT
7	SP RHI	I	REFERENCE H SYNC. SIGNAL FOR SPINDLE SERVO INPUT
8	CNT2	O	TBC CONTROL OUTPUT (H: LINE SYSTEM, L: BURST SYSTEM)
9	JUMP TGL	O	JUMP TOGGLE OUTPUT
10	SYEX	O	SYNC. SIGNAL FOR CHARACTER GENERATOR SELECT. NOT USED
11	CGV	O	V SYNC. GENERAL FOR CHARACTER GENERATOR OUTPUT. NOT USED
12	Vss		GND
13	SELH	O	H SYNC. SIGNAL FOR CHARACTER GENERATOR (IC011 ON MB-712 BOARD) OUTPUT
14	XPHS	O	PB H SYNC. SIGNAL OUTPUT. NOT USED
15	SP PBHO	O	PB H SYNC. SIGNAL FOR SPINDLE SERVO OUTPUT
16	SP PBHI	I	PB H SYNC. SIGNAL FOR SPINDLE SERVO INPUT
17	HS	O	CENTER OF ECCENTRICITY OUTPUT. NOT USED
18	MEM REFH	O	REF H OUTPUT FOR THE SET WITH MEMORY (NOT RESET). NOT USED
19	FSC	O	fsc (3.579545 MHz) OUTPUT
20	XOUT	O	4 fsc (14.31818 MHz) OUTPUT
21	XIN	I	4 fsc (14.31818 MHz) INPUT (CLOCK)
22	HD	I	H SYNC. SIGNAL FOR DIGITAL TBC INPUT
23	Vss		GND
24	V MUTE	O	VIDEO MUTE SIGNAL OUTPUT
25	V MUTE2	O	SIGNAL FOR ADDING REF. V SYNC. SIGNAL TO PLAYBACK VIDEO SIGNAL DURING CLV SCANNING
26	G BURST	O	BURST SIGNAL (3.58 MHz) FOR GRAY PICTURE GENERATION DURING CLV SCANNING
27	PC OUT1	O	SPINDLE SERVO FORCED ACCELERATION/DECELERATION SIGNAL OUTPUT. (H: ACCELERATION, L: DECELERATION, Hiz: OTHERS)
28	PC OUT2	O	SPINDLE SERVO H SERVO ERROR OUTPUT
29	TBC H	I	H SYNC. SIGNAL AFTER TBC CORRECTION FOR CHARACTER GENERATOR INPUT
30	DS GATE	O	GATE SIGNAL FOR READING OUT PHILLIPS CODE (FRAME NO.)
31	DATA	I	PHILLIPS CODE DATA INPUT
32	V MUTE1	O	BLANKING V SYNC. SIGNAL OF PLAYBACK VIDEO SIGNAL DURING CLV SCANNING
33	VDD		+5 V
34	DLRH	O	GRAY SIGNAL FOR GENERATING GRAY PICTURE DURING CLV SCANNING
35	-GRH	O	H SYNC. SIGNAL FOR GENERATING GRAY PICTURE DURING CLV SCANNING
36	SP UNLOCK	O	SIGNAL FOR SETTING BY MECHANISM CONTROLLER OUTPUT WHEN SPINDLE IS UNLOCKED
37	8/$\overline{12}$	O	LD DISC SIZE SET OUTPUT. (H: 8 INCHES, L: 12 INCHES) NOT USED
38	CD/$\overline{\text{LDCDV}}$	O	DISC TYPE SET OUTPUT H: PLAYBACK CD OR AUDIO PART OF CDV L: PLAYBACK LD OR VIDEO PART OF CDV
39	CDV	O	SPINDLE SERVO MODE SET (H: VIDEO PART OF CDV)
40	FGMD	O	SPINDLE SERVO MODE SET (H: FG MODE (WHILE COUNTING SPINDLE FG, FORCING TO ACCELERATE/DECELERATE SPINDLE MOTOR))

PIN NO.	PIN NAME	I/O	FUNCTION
41	HP OUT	O	HOLD PULSE OUTPUT NORMALLY OUT. PULSE OUTPUT DURING JUMPING TRACKS
42	Vss		GND
43	SV CLK	O	CLOCK FOR SERVO IC (IC401 ON MB-712 BOARD) 1/8 fsc (APPROX. 450 kHz)
44	JMP	I	TRACK JUMP CONTROL SIGNAL INPUT (GATE FOR HP OUT)
45	SET CLK	I	INTERNAL A, B REGISTER CLOCK INPUT FROM SYSTEM CONTROL MICROPROCESSOR (IC501 ON MB-712 BOARD)
46	GVID	I	GRAY PICTURE CONTROL SIGNAL INPUT DURING CLV SCANNING (H: GRAY PICTURE, L: PLAYBACK PICTURE)
47	SET DT	I	INTERNAL A, B REGISTER SERIAL DATA INPUT FROM SYSTEM CONTROLLER
48	CLS DT	O	CLV SCAN V SYNC. COUNTER DATA OUTPUT TO SYSTEM CONTROLLER. NORMALLY L. DATA OUTPUT WHEN CLS CLK (PIN ㊾) IS H. CLOCK IS SET CLK (PIN ㊺)
49	CLS CLK	I	CLOCK FOR READING OUT CLV SCAN V SYNC COUNTER DATA CONTROL SIGNAL INPUT
50	B LD	I	INTERNAL B REGISTER LATCH INPUT
51	A LD	I	INTERNAL A REGISTER LATCH INPUT
52	Vss		GND
53	$\overline{\text{REF V}}$	O	REFERENCE V SYNC. SIGNAL OUTPUT
54	$\overline{\text{PB V}}$	O	PLAYBACK V SYNC. SIGNAL OUTPUT
55	TBC HOLD	I	CHROMA TBC CONTROL SIGNAL INPUT
56	SP LOCK	O	SPINDLE SERVO LOCK SIGNAL OUTPUT (H: DURING LOCKING). NOT USED
57	JP CTL	I	TRACK JUMP SELECT SIGNAL INPUT (H: 1 TRACK JUMP, L: MULTI TRACK JUMP)
58	FQSEL	I	PHILLIPS CODE/SUBQ (SUB CODE) SELECT SIGNAL INPUT (L: SUBQ)
59	FQACK	I	PHILLIPS CODE, SUBQ DATA OUTPUT CONTROL (H: DATA OUTPUT)
60	$\overline{\text{F REQ}}$	O	PHILLIPS CODE READING OUT ENABLE SIGNAL OUTPUT
61	$\overline{\text{MRST}}$	I	SYSTEM RESET INPUT (L: RESET)
62	FSC2	O	2 fsc (7.159 MHz) OUTPUT
63	Vss		GND
64	FH2	O	2 fH (3.15 kHz). CARRIER FOR SPINDLE MOTOR PWM DRIVE CIRCUIT
65	$\overline{\text{DSPSEL}}$	I	CLOCK CONTROL SIGNAL FOR DSP IC (IC203 ON MB-712 BOARD) (L: CONNECTED TO DSP)
66	FQCLK	I	CLOCK FOR READING OUT PHILLIPS CODE, SUBQ DATA INPUT
67	D OUT	O	PHILLIPS CODE, SUBQ CODE SERIAL DATA OUTPUT
68	SUBQ CLK	O	SUBQ TRANSFERRING CLOCK
69	SUBQ	I	SUBQ DATA INPUT
70	DSP CLK	O	CLOCK FOR DSP IC OUTPUT
71	DOCINH	O	DROP OUT CORRECTION INHIBITION OUTPUT. NOT USED
72	CLV1	O	SPINDLE SERVO GAIN MONITOR OUTPUT. NOT USED
73	VDD		+5 V
74	CLV2	O	SPINDLE SERVO GAIN MONITOR OUTPUT. NOT USED
75	REF HE	O	REF HE MONITOR OUTPUT. NOT USED
76	REF HC	O	REF HC MONITOR OUTPUT
77	HMSK	O	PHILLIPS CODE MASKING SIGNAL MONITOR OUTPUT
78	BQ6	O	B REGISTER D6 OUTPUT. NOT USED
79	BQ7	O	B REGISTER D7 OUTPUT. NOT USED
80	TEST	I	TEST MODE INPUT (H: TEST)

6-3. MODE CONTROL MICROPROCESSOR PIN FUNCTION (FP-735 BOARD IC301 MB89094PG-G-119)

Pin No.	Pin Name	I/O	Description
1	CL1	O	N.C
2	CL0	I	GND
3	MOD0	I	GND
4	MOD1	I	GND
5	X0	I	8MHz in
6	X1	I	8MHz out
7	GND	I	GND
8	$\overline{\text{RST}}$	I	X RST
9	$\overline{\text{MRST}}$	O	Resetting mechanism control microprocessor.
10	$\overline{\text{BUSY}}$	O	Mechanism control microprocessor communication busy.
11	P.CONT	O	Power supply control.
12	$\overline{\text{LED A}}$	O	A-side LED
13	$\overline{\text{LED B}}$	O	B-side LED
14	GND	I	GND
15	GND	I	GND
16	GND	I	GND
17	$\overline{\text{REF V}}$	I	V. sync signal
18	$\overline{\text{MMICS}}$	I	Mechanism control microprocessor chip select
19	GND	I	GND
20	GND	I	GND
21	GND	I	GND
22	GND	I	GND
23	GND	I	GND
24	GND	I	GND
25	GND	I	GND
26	OTASUKE	I	GND
27	$\overline{\text{H DET}}$	I	External input signal exist/not exist
28	CMOD	I	PULL UP
29	N.C	I	
30	DSP SI	O	DSP output data
31	DSP CLK	O	DSP output clock
32	SIRCS IN	I	SIRCS data input
33	$\overline{\text{MIC IN}}$	I	Microphone input
34	$\overline{\text{DSP ACK}}$	I	DSP ACK input
35	$\overline{\text{DSP REQ}}$	O	DSP request output
36	$\overline{\text{DSP READY}}$	O	DSP ready output
37	$\overline{\text{DSP RST}}$	O	DSP reset
38	$\overline{\text{DSP PORT COUT}}$	O	DSP port control
39	$\overline{\text{AUX}}$	O	External input switching
40	$\overline{\text{LED1}}$	O	Karaoke on LED
41	$\overline{\text{LED2}}$	O	Key control negative (−) LED
42	$\overline{\text{LED3}}$	O	Key control standard LED
43	$\overline{\text{LED4}}$	O	Key control positive (+) LED
44	GND	I	GND
45	J/$\overline{\text{US}}$	I	
46	AU MUTE	O	Audio mute
47	$\overline{\text{CG CS}}$	O	OSD chip select
48	$\overline{\text{LED M PLAY}}$	O	Continuous play LED
49	Vcc	I	EVER+5V
50	DOOR SW	I	Door switch

Pin No.	Pin Name	I/O	Description
51	GND	I	GND
52	GND	I	GND
53	GND	I	GND
54	GND	I	GND
55	GND	I	GND
56	GND	I	GND
57	GND	I	GND
58	Vss	I	GND
59	SEG D	O	7-Segment
60	SEG E	O	7-Segment
61	SEG C	O	7-Segment
62	SEG G	O	7-Segment
63	SEG A	O	7-Segment
64	SEG F	O	7-Segment
65	SEG B	O	7-Segment
66	N.C	I	
67	7CTL	O	7-Segment control
68	GND	I	GND
69	GND	I	GND
70	GND	I	GND
71	GND	I	GND
72	GND	I	GND
73	GND	I	GND
74	LINE SELECT	O	Serial communication path switching
75	N.C	I	
76	$\overline{\text{MMICS}}$	I	Mechanism control microprocessor chip select
77	MECH SO	I	Mechanism control microprocessor received data
78	MECH SI	O	Mechanism control microprocessor/OSD send data
79	MECH CLK	O	Communication clock
80	N.C	I	
81	N.C	I	GND
82	N.C	I	GND
83	Vss	I	GND
84	AD0	I	Key input
85	AD1	I	Key input
86	AD2	I	Key input
87	N.C	I	
88	N.C	I	
89	N.C	I	GND
90	N.C	I	GND
91	N.C	I	GND
92	AVcc	I	EVER+5V
93	N.C	I	GND
94	REG MONITOR	I	REG5V power supply voltage monitoring
95	−16V MONITOR	I	UNREG−16V power supply voltage monitoring
96	REMOTE CONT	I	Microphone key input
97	LED V MODE	O	VOCAL LED
98	LED S MODE	O	SORROUND LED
99	LED AUX	O	External input LED
100	Vcc	I	EVER+5V

SECTION 7
ELECTRICAL ADJUSTMENT

During the adjustments, see the parts alignment diagram for adjustment starting from page 7-21.

7-1. LIST OF SERVICING JIGS

- Oscilloscope
- Color monitor TV
- Digital voltmeter
- Frequency counter
- Remote commander (RMT-M26A)
- LD alignment disc HVL-8 (8-797-008-00)
  NTSC Reference Disc (Reference 7 can also be used.)

7-2. CAUTIONS ON ADJUSTMENT

- Disc load/unload operation must not be performed when servicing with the unit laying down sideways. (Never press the OPEN and CLOSE buttons.)
- When laying the unit down sideways, perform adjustment with the left side down and with the power on.
- When adjusting the servo system, be sure to set up the unit horizontally.

7-3. DEBUGGING MODE

- What is the debugging mode?

The contents in the RAM of the microprocessor can be displayed o the screen for the repair and maintenance purposes. The status of the MDP-A600K in which this debugging function is available is called "the debugging mode".

The followings are the differences between the debugging mode and the normal operation mode.

(1) The background color of the screen changes in green when the debugging commands are effective. (When the background color is set to display.)

(2) Under the status described item (1) above, pressing the key on the remote control unit displays the history of emergency conditions or other debugging information.
Some keys are not effective when the background color is green.

1. How to enter the debugging mode

To enter the debugging mode from a normal operation mode (in a normal status of operation), turn on the unit, press the 0 key and then the STOP key on the remote control unit while holding down the SELECT key on the main unit.

When the following display appears on the screen, the unit is in the debugging mode. This display shows the version number of the microprocessor. For details, refer to 4-1. "[FRAME/TIME] key for displaying version number of the microprocessor".

The SELECT key functions as the debug command ON/OFF switch key when the main unit is in the debugging mode.

When the background color is displayed (in the STOP, PAUSE or some other modes), and if the debug command is effective , the background color changes in green.

(Note that it is violet in the service mode.)

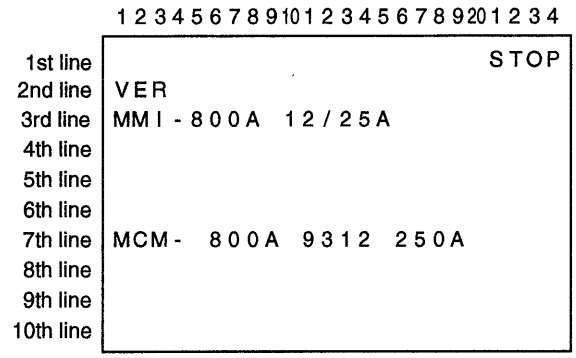


Fig. 7-1 Debugging mode initial display

2. How to exit the debugging mode

To exit the debugging mode, press the CLEAR key on the remote control unit when the menu (version number of the microprocessor indication in the green background color) in Fig. 7-1 is displayed.

The same key operation as step (1) also sets the mode back in the normal operation mode. The SELECT will have its normal key function after the machine exists the debugging mode.

3. Switching the screen display

The display is set for "debugging display" immediately after entering the debugging mode. The display mode can be switched in the same way as in the normal operation mode by pressing the screen display key. In the debugging mode, however, "debugging display" mode can be selected as one of the display modes, in addition to "no display (displays nothing in most cases)", "small display (displays only the 1st line in most cases)", and "large display (displays full screen in most cases)" modes.

Pressing the screen display key in the normal operation mode changes the display mode as follows:

→No display → Small display → Large display→

Pressing the screen display key in the debugging mode changes the display mode as follows:

→No display → Small display → Large display →
Debugging display→

4. Explanation of the debugging display

In the debugging display mode, the information on the mode controller is displayed on the screen as a dump list. The title is displayed at the left on the 2nd line from the top. The data is displayed on the 3rd line through the 9th line.

The display of the data in one line consists of up to four sets (total of 8 bytes) of four character (2 bytes character each) sets in hexadecimal notation.

The information to be displayed can be selected in the "debugging mode", by setting the back ground color to green and pressing the desired key (as listed below).

The following table lists the information which are currently available and which can be displayed.

Table 7-1 List of the keys to be used in the debugging mode and corresponding information

Keys	Information to be displayed
[FRAME/TIME]	Version number of the microprocessor
[1]	History of the function modes
[2]	History of the emergency occurrence
[3]	Information for repair service in normal mode
[4]	Trap-flag
[5]	Key/remote control data
[7]	Information on communication with the mechanism controller

4-1. [FRAME/TIME] Version number of the microprocessor

[FRAME/TIME] key for displaying version number of the microprocessor

Pressing this key displays the version number of the microprocessor. The version number of the mode controller appears on the 3rd line, and that of the mechanism controller appears on the 7th line. An example in Fig. 7-2 shows that the version number of the mode controller is "MMI-800A 12/25A" and that of the mechanism controller is "MCM-800A 9312 250A".

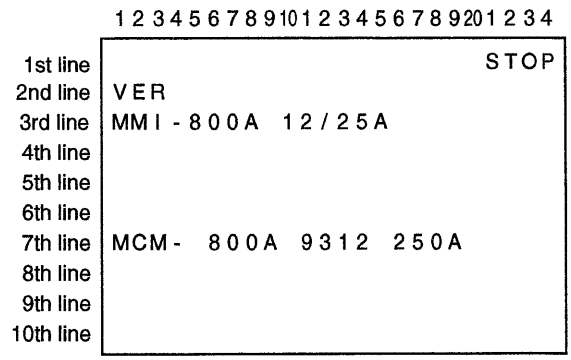


Fig. 7-2 Version number of the microprocessor

4-2. [1] History of the function modes

[1] key for displaying the history of the function modes

Pressing this key displays the history of the principal operation commands such as STOP and PLAY (which represent function modes) sent from the mode controller to the mechanism controller.

The function mode data is the one-byte (two digits in hexadecimal notation) data. Up to 8 histories of the function modes can be displayed on a line. A total of 16 histories of the function modes are available using two lines. Unless the unit is unplugged, the data are kept intact in memory even when the unit is turned off.

The data to be stored appears on the screen from left to right 1 byte by 1 byte, and "FF" appears to the right of the last data byte. The data byte continues from the right end on the 1st line to the left end of the 2nd line, and from the right end on the 2nd line to the left end on the 1st of line. The last stored data of the function modes (which is the mode selected at present) appears on the left of "FF". That is, when "FF" appears at the left end of the 1st (or the 2nd) line, the last stored data appears at the right end on the 2nd (or the 1st respectively) line.

"FE" means there has been an emergency case at the data point. To check the type of the emergency case, refer to 4-3 "The [2] key for displaying the history of the emergency occurrence".

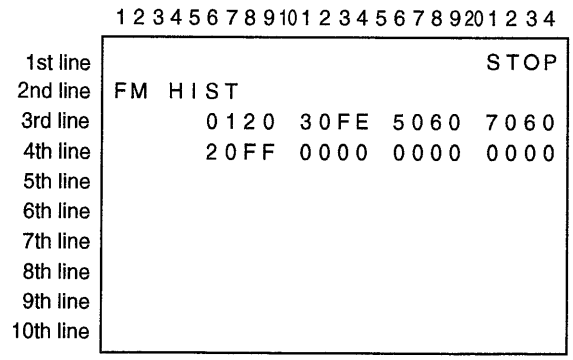


Fig. 7-3 History of the function modes

Figure 7-3 shows that the function modes have changed as follows:

01 (Power on start up)
→ 20 (Stop)
→ 30 (Start up of side A)
→ FE (An emergency occurred.)
→ 50 (Chapter search)
→ 60 (Playback)
→ 70 (Slow speed scanning in normal direction)
→ 60 (Playback)
→ 20 (Stop) [The last function mode]

Table 7-5 lists the function modes.

4-3. [2] History of the emergency occurrence

Pressing the [2] key displays the history of the emergency occurrence with the codes which are the emergency codes. If an emergency occurs in the mechanism controller, the emergency codes are generated and sent to the mode controller microprocessor. This is the one-byte data or the two-digit data in hexadecimal notation.

Some emergency codes simply have the meanings of the status codes such as "64 (Detection of minimum chapter)". The emergency codes "80" and higher are generated by the mode controller itself, not input from the mechanism controller.

The data will show "00" if there has been no emergency occurrence since when the unit has been plugged in.

The display type is the same as that for the history of the function modes. However, up to 8 histories using only one are available in this case. The emergency code which appears just before "FF" corresponds to the data of "FE" in the history of the function modes, which is the closest one to "FF".

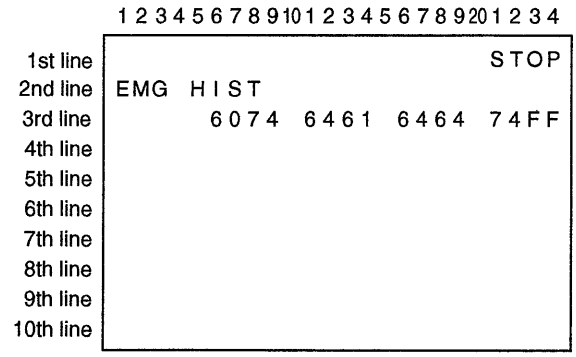


Fig. 7-4. History of emergency occurrence

Figure 7-4 shows that the emergency has occurred in the following order because the data next to "FF is 60 on the left of the line.

60 (Detection of lead-in point)
→ 74 (Focusing failed)
→ 64 (Detection of minimum chapter)
→ 61 (Detection of lead-out point)
→ 64 (Detection of minimum chapter)
→ 64 (Detection of minimum chapter)
→ 74 (Focusing failed) [The last function mode]

Table 7-5. lists the emergency code.

4-4. [3] Information for repair service, sent from the mechanism controller

Pressing this key displays the information sent from the mechanism controller, which is necessary for repair service.

At present, the information listed in Table 7-4 is available. Data numbers in the table correspond to the numbers on the 3rd line through the 5th line in Figure 7-5.

Data number	Data
(02)	Mode of mechanisms (internal mode of the mechanism controller) See the following section for details.

Table 7-4. Information for repair service, sent from the mechanism controller

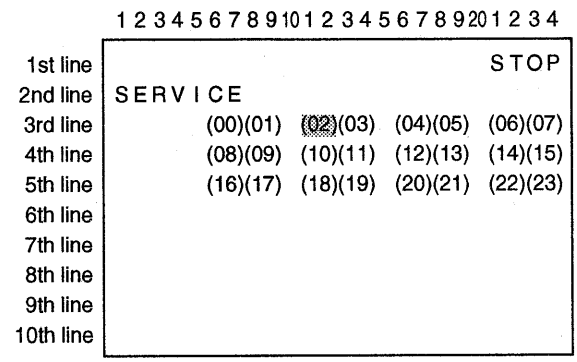


Fig. 7-5. Information for repair service, sent from the mechanism controller

- About the operation modes of the mechanisms

The operation modes of the mechanisms are the basic operation mod in the mechanism controller. Those almost the same as those available with the unit as the function modes. But, there are several supplemental modes for the mechanisms.

The table below shows the operation modes of the mechanisms.

No.	Functions
00	Power off
01	Initialization of the mechanism controller (Without operating the mechanisms)
03	In the process from power ON to power OFF
04	In the process from power OFF to power ON
05	Initialization of the mechanisms and related ICs.
10	Ejected status of the tray
11	In the process of ejection of the tray
12	In the process of loading of the tray
20	In stop status with the disc chucking up
21	In the process of chucking up from chucking of side A
22	In the process of chucking of side A from chucking up
23	In chucking status of side A
30	Until focus servo of side A has been locked.
31	From lock of focus servo to start-up of 0 search
32	In operation from side A/B to stop
33	In process of reversing side B from side A
40	Until focus servo of side B has been locked.
50	Chapter search
51	Frame/Time search
60	Playback
61	Pause
70	Slow speed normal direction scanning
71	High speed normal direction scanning
72	Slow speed reverse direction scanning
73	High speed reverse direction scanning
74	In the process of scanning completion
80~FF	The same as function mode)

Table 7-5. Operation modes of the mechanisms

Table 7-2. List of the function modes

Number	State	Description
00	Power OFF	
01	Power ON and start up	Initializes when power is turned ON.
10	Open	Opens the door and ejects the tray.
20	Stop	Closes the tray and stops.
30	Preparation for side A playback	From stop up to immediately before side A search
40	Preparation for side B playback	From stop up to immediately before side B search
50	Chapter search	Searches a chapter, including disc top search.
51	Frame/time search	Searches a frame and time in CAV.
60	Playback	Plays back.
61	Pause	Pauses.
70	Slow speed scanning in normal direction	>>
71	High speed scanning in normal direction	>>>
72	Slow speed scanning in reverse direction	<<
73	High speed scanning in reverse direction	<<<
80	Still playback in normal direction	Plays back in STILL mode. (Only in CAV mode)
81	Step playback in normal direction	Plays back one frame after frame. (Only in CAV mode)
82	1/90 times speed playback in normal direction	(Only in CAV mode)
83	1/30 times speed playback in normal direction	(Only in CAV mode)
84	1/16 times speed playback in normal direction	(Only in CAV mode)
85	1/8 times speed playback in normal direction	(Only in CAV mode)
86	1/4 times speed playback in normal direction	(Only in CAV mode)
87	1/2 times speed playback in normal direction	(Only in CAV mode)
88	Normal (1 time) speed playback in normal direction	(Only in CAV mode)
89	2 times speed playback in normal direction	(Only in CAV mode)
8A	3 times speed playback in normal direction	(Only in CAV mode)
8B	5 times speed playback in normal direction	(Only in CAV mode)
8C	10 times speed playback in normal direction	(Only in CAV mode)
90	Still playback in reverse direction	Plays back in STILL mode. (Only in CAV mode)
91	Step playback in reverse direction	Plays back one frame after frame. (Only in CAV mode)
92	1/90 times speed playback in reverse direction	(Only in CAV mode)
93	1/30 times speed playback in reverse direction	(Only in CAV mode)
94	1/16 times speed playback in reverse direction	(Only in CAV mode)
95	1/8 times speed playback in reverse direction	(Only in CAV mode)
96	1/4 times speed playback in reverse direction	(Only in CAV mode)
97	1/2 times speed playback in reverse direction	(Only in CAV mode)
98	Normal (1 time) speed playback in reverse direction	(Only in CAV mode)
99	2 times speed playback in reverse direction	(Only in CAV mode)
9A	3 times speed playback in reverse direction	(Only in CAV mode)
9B	5 times speed playback in reverse direction	(Only in CAV mode)
9C	10 times speed playback in reverse direction	(Only in CAV mode)
FE	Appears for indicating an occurrence of emergency.	An emergency occurred.
FF	Appears next to the last data.	(The last function mode)

Table 7-3. List of the emergency codes

Number	State	Description
01	Requirement of forced power off	Power off
02	Requirement of forced ejection of the tray	Eject
03	Requirement of stop	Stop
04	Requirement of stop when opening the door	stop
05	Requirement of forced playback	Play
06	Requirement of determination for mode change when power off	Freezes power off display
07	Requirement of power off after communication stops.	Power off
10	Detection of movement for pushing in the tray	Play
11	Detection of no movement of the tray	Power off
20	Detection of no movement of the sledder	Power off
30	Detection of no movement of the tilt	Power off
40	No detection of the spindle FG	Power off
41	No achievement of continuous servo lock from FG servo to H servo	Stop
42	Above the high rotation limit	Stop
43	Below the low rotation limit	Stop
44	No complete stop operation for the spindle movement	Power off
45	Time over error for the spindle control operation	Power off
50	Focusing failed	Stop
51	Focusing failed (with a disc loaded)	Stop
52	Detected as if the disc was an LD	Stop
53	Focusing of LD8 failed	Stop
54	Reading of TOC failed on a disc of CD or CDV	Stop
60	Detection of the lead-in code	Play or so
61	Detection of the lead-out code	Stop/Pause or so
62	Detection of the lead-out of part A on CDV	Stop/Pause or so
63	Detection of a picture stop	Still
64	Detection of the minimum chapter	None
65	Reading of subcode failed on a disc of CD or CDV	Stop
66	Reading of Philips code failed on a disc of LD	Stop
67	The locked groove processing was executed.	None
70	Detection of over search	Play
71	Detection of under search	Play
72	Time over for the search operation	Play
74	Focusing failed during search	Stop
76	Focus servo unlocked and retry was executed.	None
80	Emergency time out	Power off
81	Search time out	Play
82	Mechanism controller communication time out	Power off
83	DSP communication time out	Power off

4-5. [4] Trap-flag

[4] key for displaying the trap-flags

Pressing this key displays the cause of the trap-flag. The trap-flag is "an abnormal power off" of the mode controller (this excludes when it is turned off with the power key).

The one byte at the right (2 digits of hexadecimal notation) is the flag which has specific meaning. The bit which corresponds to the cause of the last abnormal power off is set 1.

The one byte at the left is the flag for all (logic OR of) the causes of abnormal power off since when the unit has been plugged. in.

Both the flags can be cleared by setting the background color in green and pressing the clear key.

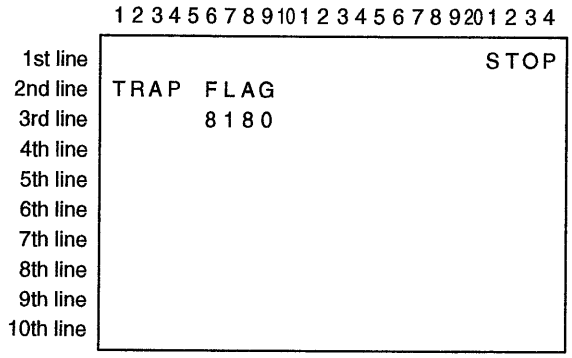


Fig. 7-6. Trap-flag

An example of the trap-flag shown in Figure 7-6 shows that there have been two cases of abnormal power off before; 80 by abnormal voltage level and 01 by forced reset by the user (see the byte 81 in hexadecimal notation on the left). It also shows that the last abnormal power off has been caused by 80 (abnormal voltage level) (see the byte 80 in hexadecimal notation on the right).

Table 7-6 shows meaning and causes of the trap-flag.

Table 7-6. Trap-flag and bits and their meaning

Bit number (Pattern)	Causes
7(80h)	Power off caused by abnormal voltage level
6(40h)	Power off caused by abnormal communication with the mechanism controller
5(20h)	Power off caused by an occurrence of emergency
4(10h)	Forced power off by the key operation
3(08h)	Resetting by self-check by the mode controller
2(04h)	Resetting by self-check by the mode controller
1(02h)	Resetting by self-check by the mode controller
0(01h)	Forced resetting by the key operation

Note 1: Resetting, which is indicated with bits 0 to 3 in the table, means that setting the status of the mode controller back to the same status as the when the unit was plugged in, except for initialization of the trap-flag.

Note 2: A of hexadecimal notation is 2+8. In the same manner, B=1+2+8. C=4+8. D=1+4+8. E=2+4+8. F=1+2+4+8.

4-6. [5] Key/remote control data

[5] key for displaying the key/remote control data

Pressing this key displays the key input data of the main unit and the input data by the remote control unit, using SIRCS codes. Note that this operation is effective on the remote control unit for MDPs only.

The one byte (2 digits in hexadecimal notation) on the left of the 3rd line in Figure 7-7 is the SIRCS code of the key input data of the main unit, and that on the right is the SIRCS code of the input data by the remote control unit. When no key is pressed or there is no input, "FF." appears. When two keys are pressed almost at the same time, the SIRCS code of the input data by the first pressed key will appear.

The keys to which SIRCS codes are not assigned (i.e., KARAOKE PON key) are defined as internal keys, using the data of 80 or higher in hexadecimal notation.

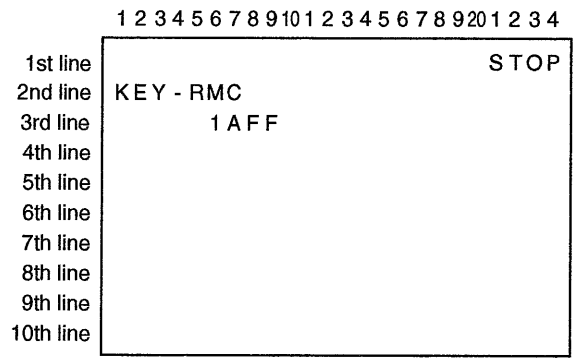


Fig. 7-7. Key and remote control data

An example in Figure 7-7 shows that the playback key (1A in hexadecimal notation) on the main unit is pressed but there is no input (FF in hexadecimal notation) from the remote control unit. However, note that, in some cases, the remote control unit generates SIRCS codes momentarily only at the moment when the key is pressed.

Table 7-7 lists the SIRCS codes used in the MDP-A600K.

Table 7-7. List of SIRCS codes for MDPs

No.	Functions
00	Numeral 1
01	Numeral 2
02	Numeral 3
03	Numeral 4
04	Numeral 5
05	Numeral 6
06	Numeral 7
07	Numeral 8
08	Numeral 9
09	Numeral 0
0F	Clear
15	Power ON/OFF
16	Close/open of tray
17	Audio monitoring
18	Stop
19	Pause
1A	Playback
1E	Slow speed reverse direction scanning
1F	Slow speed normal direction scanning
29	Repeat
2B	Step in normal direction
2C	Step in reverse direction
30	Program
34	ACS in normal direction
35	ACS in reverse direction
39	Numeral + 10
3A	Screen display
40	Analog audio/CX
47	1/one side/double side
4F	Medium speed normal direction playback
5D	Side A
5E	Side B
60	Key control up
61	Key control standard
62	Key control down
63	Surround
7B	Next disc reserve
7E	Continuous playback
	(The followings are the expended codes.)
90	Vocal
91	KARAOKE PON
94	Select
95	External input selection
FF	No keys are pressed.

FF Appears when there is no input.

4-7. [7] Information on communication with the mechanism controller

[7] key for displaying the information on communication with the mechanism controller

Pressing this key displays the communication data with the mechanism controller.

The data transmitted from the mode controller to the mechanism controller appears on the 3rd line through the 5th line. The data transmitted from the mechanism controller to the mode controller appears on the 7th line through the 9th line. The exclamation marks "!" at the left on the 8th and the 9th lines indicate that the communication is carried out successfully. Question mark "?" appears if communication stops. A bracket mark [n] appears if communication stops after carrying out once the communication on the purpose of servicing.

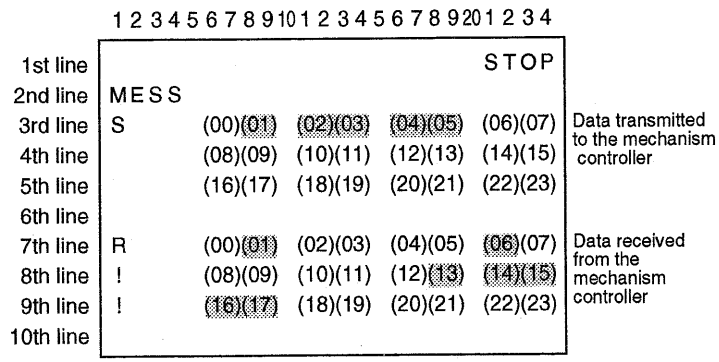


Fig. 7-8. Information on communication with the mechanism

The table bellow shows some communication information.

Table 7-8. Data from the mode controller to the mechanism (Upper block in Figure 7-8)

No.	Description
(01)	The function mode at present (next)
(02)	The function mode of final purpose
(03-05)	Target address of search (Time/Frame)

Table 7-9. Data from the mechanism controller to the mode controller (Lower block in Figure 7-8)

No.	Description
(01)	The function mode at present (next)
(06)	The flag for completion of function mode change (0 bit)
(13)	Current chapter/track number
(14)	Current index number
(15-17)	Current address (Time/Frame)

7-4. SERVICE MODE

• What is the service mode?

The functions for the use of reparation and maintenance (the service mode) are incorporated in the MDP-A600K. The mode in which those functions are available is called "the service mode".

The followings are the differences between the service mode and the normal operation mode.

(1) Special operations such as focusing search and sledding can be carried out.
(2) Power is not turned off automatically in an emergency condition of power off.
(3) When entering the service mode, also the debugging mode is started automatically.

1. How to enter the service mode

The following procedure shows how to enter the service mode.

(1) While the power is turned off, connect the test pin (TP501 for service mode setting) on the MB board of the main unit, to the ground.
(2) Turn on the power by pressing the power key of the main unit. Nothing is displayed on the screen at this moment.
(3) Disconnect the test pin (the connection was performed in step (1) above) from the ground.

The service mode can be started when the background color changes in violet. If the background color is blue or black, the service mode is not ready yet. If so, restart the procedure from step (1) above.

However the violet color background is established in the KARAOKE mode too with a microphone plugged in. To avoid confusion, unplug microphone beforehand.

When the unit enters the service mode, the unit is also entered in the debugging mode (the functions those available in both modes can be used). Therefore, the version number of the microprocessor appears on the screen.

2. How to exit the service mode

To exit the service mode, press the power key to turn off the power. If you cannot turn off the power in this way (the operation of the mechanisms is not complete), carry out the forced power off function by pressing the reverse direction scanning key and the power key on the main unit at the same time.

3. How to use the special key functions

The special key functions in the service mode are available only under NO DISC and STOP conditions, for safety purposes.

Check that the indication for those conditions is displayed without flashing on the screen. In order to carry out the special key functions listed in Table 7-3, in the status above, press SELECT key to turn off the 7-segment display, then press the desired key such as PLAY or PAUSE on the main unit.

The sledding motion with the SIDE A or SIDE B key is effective only while holding the key pressed. However, the operation started with the PLAY or PAUSE key continues, once it is pressed, until you press the STOP key. While the unit is carrying out the special key function, the LED of side B of the main unit is lit.

Note that multiple special key functions cannot be started even if you press multiple keys at the same time.

When the 7-segment display is turned off, some keys are not effective. Be sure to press SELECT key to turn on the 7-segment display if you don't want to carry out the special key functions.

Table 7-10. List of the special key functions

Key	Special key functions
SIDE A	Sledding in reverse direction (downward)
SIDE B	Sledding in normal direction (upward)
PLAY	Focusing search
PAUSE	Tilt servo ON
STOP	Stop special operations

The followings are the details of the special key functions available with the MD-A600K.

3-1. PLAY key ····· Focusing search

Focusing search can be carried out repeatedly by holding the PLAY key. There is no fault with the unit if the pickup lens moves up and down.

Be sure to start the focusing search after checking the condition that the sled is placed in appropriate position (at around the center of side A). To stop the focusing search, press the STOP key.

3-2. SIDE A key ····· Sledding in reverse direction

The sled can be moved in reverse direction (center of side B, to edge of side B, to edge of side A, and then to center of side A) after completing initialization of the tilt (the tilt is placed in neutral position) by holding down the SIDE A key. To stop the sledding in reverse direction, release the SIDE A key.

3-3. SIDE B key ····· Sledding in normal direction

As contrary to item (2) above, the sled can be moved in normal direction (center of side A, to edge of side A, to edge of side B, and then to center of side B). This movement of the sled is desired when replacing the optical part. To stop the sledding in normal direction, release the SIDE B key.

3-4. PAUSE key ····· Tilt servo ON

The tilt servo is activated while holding down the PAUSE key. Move the sled to around the center of side A with the SIDE A and SIDE B keys, and put a CD or equivalent on the tray so that it screens the skew sensor. Then, if the tilt moves by pressing the PAUSE key, operation is normal.

The tilt can be placed back in neutral position by moving the sled with the SIDE A and SIDE B keys. To deactivate the tilt servo, press the STOP key.

7-5. OPERATING THE MDP-A600K WITH HIDDEN KEY FUNCTION

• What is the hidden key function?

Special control functions to be used for the test or some other purposes of the MDP-A600K are available by pressing, at the same time and in specific order, the multiple function keys on the main unit and/or on the remote control unit. The control functions available in this way are called "special key functions". The special key functions can be used in either of the following modes.

- the service mode, or
- the debugging mode, or
- the normal operation mode.

The special key functions can be divided into two groups according to the key control operations as follows:

- Simultaneous main-unit-key-press functions

  Some control functions can be used by pressing simultaneously multiple specific keys on the main unit.
- Simultaneous main-and-remote-control-units-key-press functions

  Some other control functions can be used by pressing simultaneously two specific keys on the remote control unit while holding down a specific key on the main unit.

1. How to use the "simultaneous main-unit-key-press functions"

The functions available by pressing simultaneously the multiple specific keys only on the main unit are called "simultaneous main-unit-key-press functions". These functions are to be used when a quick operation such as "forced power off" is required.

The following table lists the currently available simultaneous main-unit-key-press functions.

Table 7-11. List of simultaneous main-unit-key-press functions.

Functions	Keys to be pressed on the main unit
① Forced power off This function turns off power forcibly. It is to be used if you want to turn off the power in the following cases. • Operation of the mechanisms is out of control. • Power cannot be turned off by pressing the power key. Note that this function be used with care because it may turn off the power in a half way of the operation of the mechanisms.	"Reverse direction scanning" key and "power" key
② Forced reset This function carries out initialization of the mode controller in addition to the forced power off function. It is to be used if you want to reset the mode controller in the following case. Something is wrong with the mode controller such that it operates with incorrect display. Note that once this function has been carried out, all information, including the history of emergency occurrence, other than the trap-flag information in the debugging mode, will be deleted.	"STOP" key and "power" key
③ Lighting up all LEDs on the main unit This function turns on all LEDs after turning on the power automatically. Until you switched off the power, normal operation is possible while all LEDs are lit.	"B side" key and "forward direction ACS" and "power" key (With power off only)

The following functions remain the same as those of the remote control unit under the same names.

Functions	Keys to be pressed on the main unit
④ High speed scanning in reverse direction	"Vocal" key and "reverse direction ACS" key
⑤ Low speed scanning in reverse direction	"Vocal" key and "reverse direction scanning" key
⑥ Low speed scanning in forward direction	"Vocal" key and "forward direction scanning" key
⑦ High speed scanning in forward direction	"Vocal" key and "forward direction ACS" key

2. How to use the "simultaneous main-and-remote-control-units-key-press functions"

The functions available by pressing the two specific keys only on remote control unit while holding down the specific key on the main unit are called "simultaneous main-and-remote-control-units-key-press functions". It is necessary to press two keys on the remote control unit within about one seconds. This prevents an accidental use of these functions by the user.

These functions are to be carried out by using the SELECT key of the main unit so that the operation of the mechanisms should not be affected.

The following table lists the currently available simultaneous main-and-remote-control-units-key-press functions.

Table. 7-12. List of simultaneous main-and-remote-control-units-key-press functions.

Functions	Step	Keys to be pressed on the main unit and on the remote control unit
① Debugging mode ON/OFF This function puts the unit in the debugging mode from another mode, or puts the unit in any mode other than the debugging mode from the debugging mode.	1 2	"SELECT" key and "0" key "SELECT" key and "STOP" key
② Forced V muting ON/OFF This function releases the unit from the forced V muting condition if it is in the forced V muting condition, or puts the unit in the forced V muting condition if it is not in the forced V muting condition. It can be used to obtain a blue background during playback, or removing the blue background while the unit is in the stop mode.	1 2	"SELECT" key and "0" key "SELECT" key and "screen display" key
③ Resetting of V muting This function resets the unit in the V muting condition to normal condition. This is, it releases the unit from condition ≠ above.	1 2	"SELECT" key and "0" key "SELECT" key and "clear" key
④ Make mechanism controller time out ineffective. Make the function turning power off ineffective when communication with mechanism controller cannot be done. When mechanism controller doesn't operate, it is used to hasten to operate mode controller.	1 2	"SELECT" key and "0" key "SELECT" key and "+10" key "SELECT" key and "0" key "SELECT" key and "0" key
⑤ Make mechanism controller time out effective. Make the function turning power off effective when communication with mechanism controller cannot be done.	1 2	

7-6. 7-SEGMENT-DISPLAY-DURING-STANDBY FUNCTION

• What is the 7-SEGMENT-DISPLAY-DURING-STANDBY FUNCTION?

Special control function to display information on the 7-segment display device during STANDBY mode is called "7-segment-display-during-standby" function. When the unit power is turned off forcibly by the forced power off function due to an emergency occurrence so forth, the cause of the emergency or the trap-flag is displayed on the 7-segment display.

1. How to use the "7-segment-display-during-standby"

When the unit power is turned off forcibly by the forced power off function or by an emergency, the cause of the emergency is displayed for several seconds on the 7-segment display of the main unit at the moment of power off.

If the power off is caused by an emergency, the emergency code is displayed on the 7-segment while it is blinking. If it is caused by any other reason, the trap-flag is displayed on the 7-segment while it is blinking.

If the unit power has already been turned, the same content is displayed by pressing STOP key.

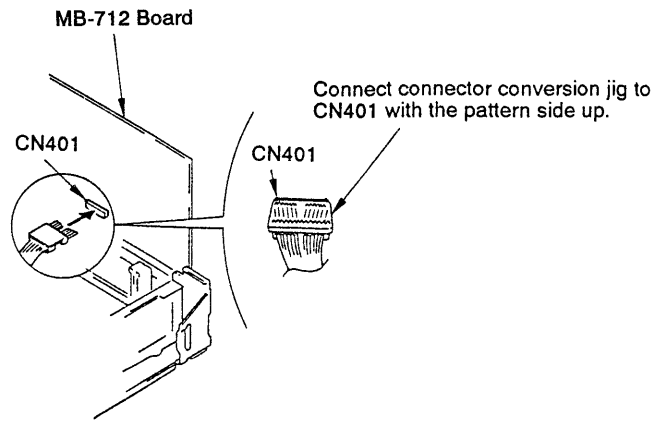
See chapter 7-3. DEBUGGING MODE for the emergency codes and the trap-flag.

7-7. ADJUSTMENT AFTER THE ATTACHMENT OF THE OPTICAL PICK-UP BLOCK

7-7-1. JIGS AND TOOLS

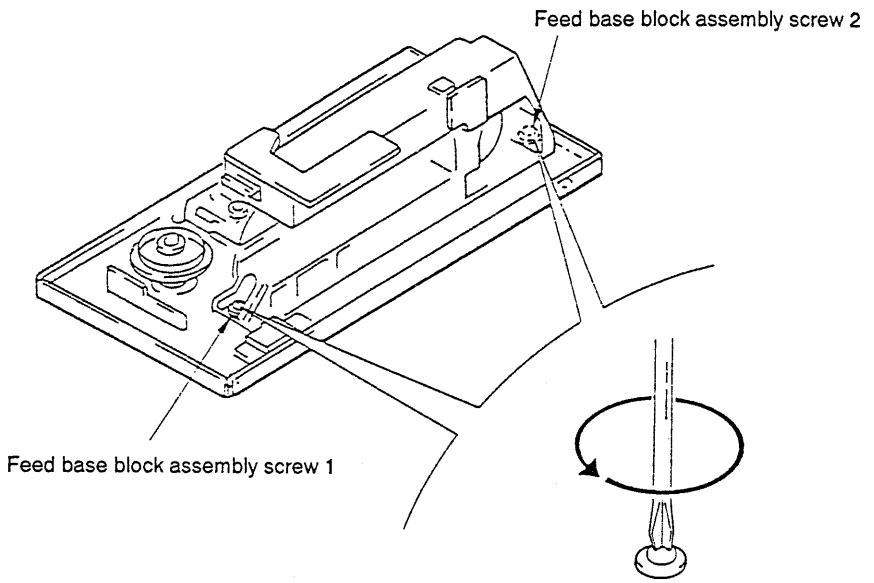
• Hexagonal wrench (Tangential screwdriver: 7-700-766-04)
• Oscilloscope
• Connector conversion jig (J-6082-059-B)
• Alignment disc Ref. 8 (HVL8: 8-797-008-00) /LD YEDS-18 (3-702-101-01) or an equivalent/CD
• Decentering screwdriver 4 ϕ (J-6095-029-A)

* Insert the teminal of the connector conversion jig to CN401 of the MB-712 Board.



7-7-2. CD ADJUSTMENT

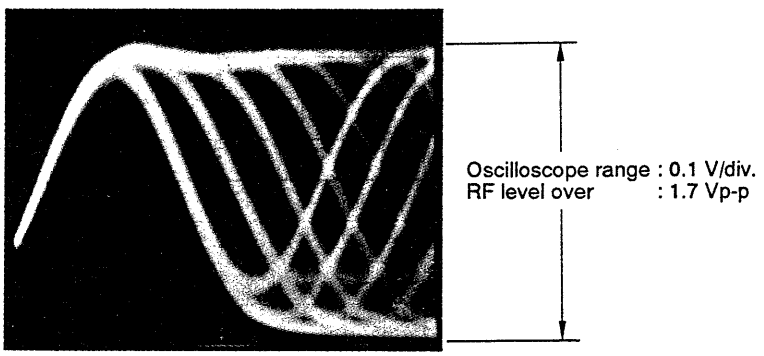
① Loosen the screws of feed base block assembly.



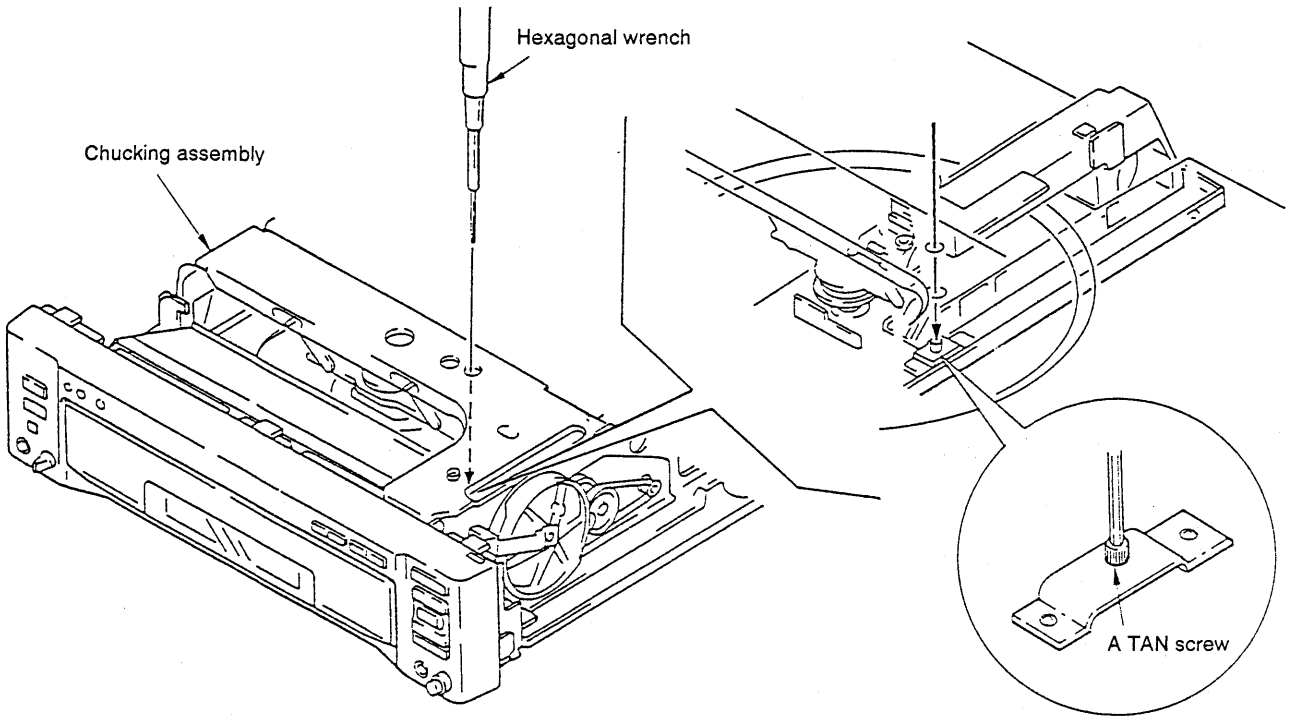
Loosen the screw about a turn from the state of being tight.

② Playback the CD alignment disc (YEDS-18) to press the Pause button about 3 seconds later.

③ Connect the oscilloscope to LD RF of the connector conversion jig to see if the waveform shown below appears.



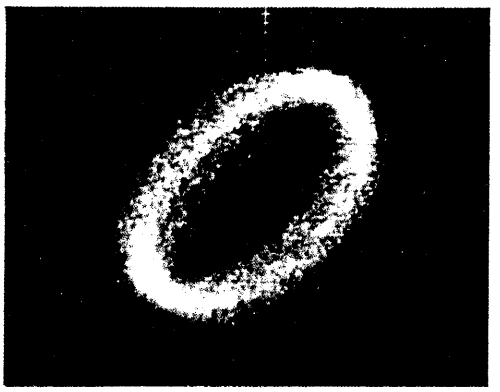
④ Insert the A TAN screw with hexagonal wrench 2.6 into the hole of top surface of chucking assembly to adjust so that RF Level is maximum. (Over 1.7 Vp-p)



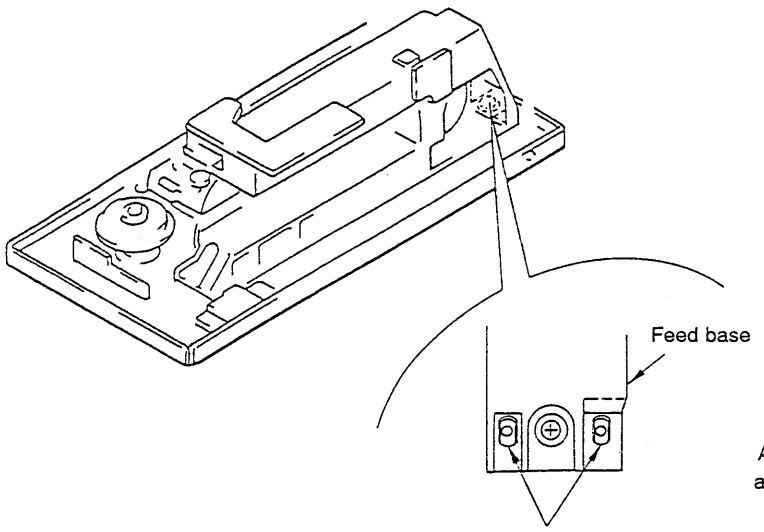
Terminal E,F/TRK, SLED OFF
Oscilloscope X/Y Lissagous range
Difference within 35 ° with each 20 mV/div.

⑤ Insert decentering screwdriver into the feed base block assembly for RD adjustment.

Before the adjustment.

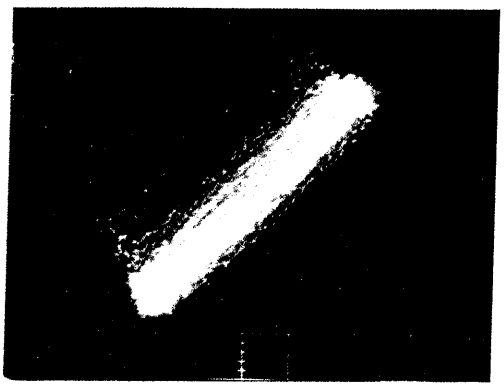


Make the figure straight.



Insert the decentering screwdriver to either one of the holes for adjustment.

After the adjustment.



⑥ Take the DISC out to tighten the 2 screws of the feed base.
⑦ Apply suitable locking compound to A TAN screw.

7-8. POWER SUPPLY CHECK (PS-716 BOARD)

Mode	Stop
Measuring equipment	Digital voltmeter
UNREG +16 V check	
Measurement point	Pin ① of CN051 (Pin ②, GND)
Specified value	15.5 ± 1.0 V
UNREG -16 V check	
Measurement point	Pin ③ of CN051 (Pin ③, GND)
Specified value	–16.5 ± 1.0 V
REG +5 V check	
Measurement point	Pin ⑤ of CN051 (Pin ④, GND)
Specified value	5.1 ± 0.5 V
REG -5 V check	
Measurement point	Pin ⑦ of CN051 (Pin ④, GND)
Specified value	–5.1 ± 0.5 V
POWER MUTE check	
Measurement point	Pin ① of CN055 (Pin ② of CN051, GND)
Specified value	15.7 ± 1.0 V
EVER 5 V check	
Measurement point	Pin ④ of CN031 (Pin ②, GND)
Specified value	5.0 ± 0.3 V

- Confirm that the power supply voltages satisfy the respective specified values.

7-9. SYSTEM CONTROL SYSTEM ADJUSTMENT

7-9-1. Master Clock Adjustment (MB-712 Board)

Mode	Stop
Measurement point	Pin ⑲ of IC502
Measuring equipment	Frequency counter
Adjusting element	CT501
Specified value	3,579,545 ± 10 Hz

Adjustment method:

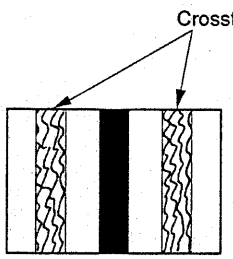
1) Adjust CT501 to 3,579,545 ± 10 Hz.

7-10. LD SIDE A TILT BALANCE ADJUSTMENT

① Playback with LD Alignment disc (HVL 8).

② Pause at #770.

Check that the vertical bar appears on TV monitor and turn RV401 to make right and left crosstalk (moire) the same level and minimum.



#770 & #130

③ Pause at #130 to check that the moire is minimum. (Do not turn RV401 at this time.)

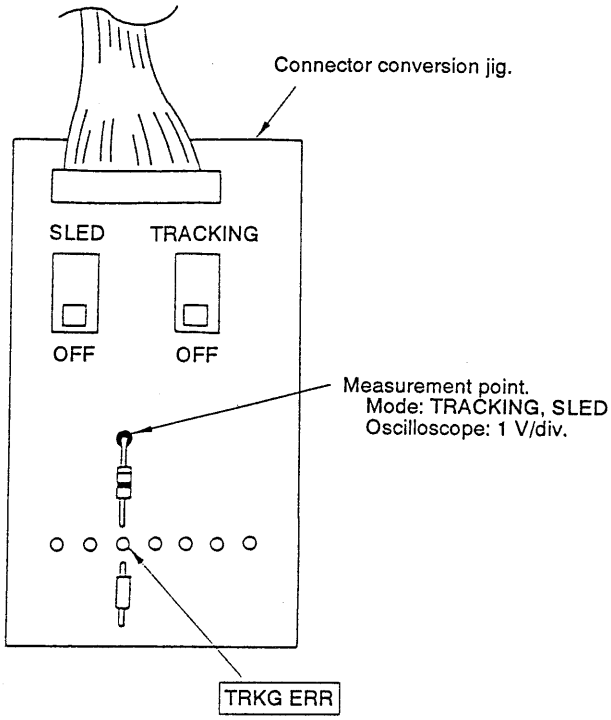
④ Tracking gain and focus gain adjustments are not necessary.

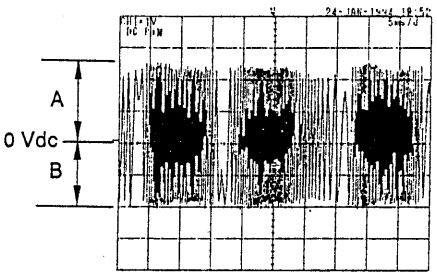
—Already adjusted at the optical pick-up block side—

⑤ Check the tracking balance.

Measure the registance at the Y terminal of TRACKING ERR on jig with oscilloscope.

Check the TRACKING BALANCE.

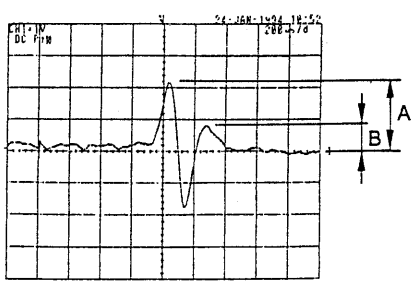




Check that it meets $-5 \leqq \frac{A-B}{2(A+B)} \times 100\ (\%) \leqq 8$

⑥ Then turn on the TRACKING and SLED to check the waveform of 1 track jump in STILL at the chapter 3 (#2201).

Check that it meets $B \leqq \frac{1}{2}A$



7-11. LD SIDE B TILT BALANCE

① Loosen RD of side B on the feed base and TAN screw. (Hexagonal screw 2.6)

② Insert the alignment disc to playback with side B at CAV side and pause at #770. Check that the same block bar as the crosstalk adjustment at the side A on monitor.

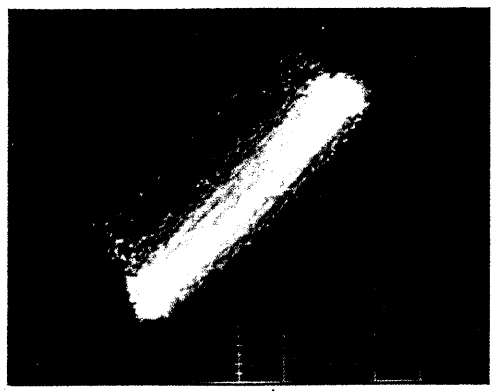
③ Insert the tip of the decentering screwdriver to the B TAN adjustment hole to adjust that the crosstalk is minimum.

④ Then in the same way, adjust with RV402 so that the crosstalk is minimum, and at this time the level on track jump should be maximum.

⑤ Check that crosstalk at #130 is minimum.

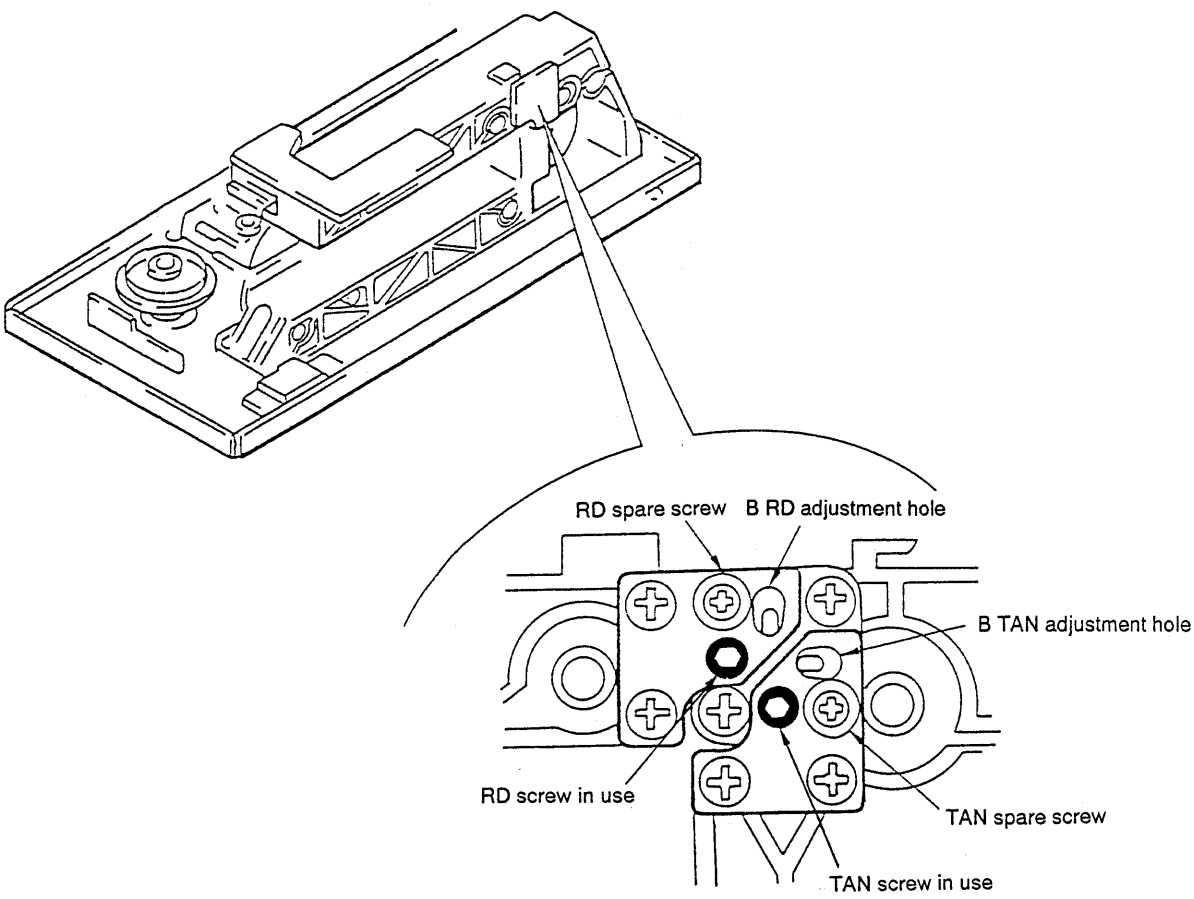
⑥ Send the disc to Chapter 3 (#2201) to pause.

⑦ Turn off the SLED and TRACKING to adjust inserting the decentering screwdriver to B RD adjustment hole so that the Lissagous waveform meets the standard.
Make not more than 1 turn in the TAN adjustment.



Jig terminal : E, F
Oscilloscope : X/Y lissagous 20 mV/div.
Phase difference : Within 35°

⑧ Take out the disc to tighten B TAN, RD screw.



7-12. VIDEO SYSTEM ADJUSTMENT

7-12-1. Burst Gate Position Adjustment (MB-712 Board)

Mode	Pause
Signal	Frame 4100 (Color bar)
Measurement point	Pin ㉓ of IC007
Adjusting element	RV002
Specified value	8.5 ± 0.1 μ sec

Adjustment method:

1) Press PAUSE (❚❚) button.
2) Search the frame 4100.
3) Adjust RV002 so that tw is 8.5 ± 0.1 μ sec.

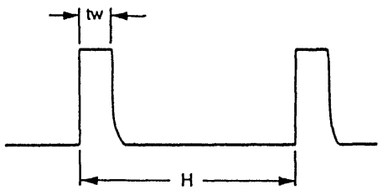


Fig. 7-9.

7-12-2. REF H Adjustment (MB-712 Board)

Mode	Pause
Signal	Frame 4100 (Color bar)
Measurement point	CH1:Pin ㉕ of IC008
	CH2:Pin ② of IC008
Measuring instrument	Oscilloscope (DC range)
Adjusting element	RV501
Specified value	Potential difference:
	4.2 ± 0.1 Vdc

Adjustment method:

1) Press PAUSE (❚❚) button.
2) Search the frame 4100.
3) Adjust RV501 so that the electric difference between the center value of the TBC voltage (Pin ㉕ of IC008) and the VEE (Pin ② of IC008) is 4.2 ± 0.1 Vdc.

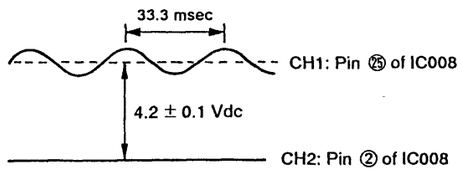


Fig. 7-10.

7-12-3. Color DOC Adjustment (MB-712 Board)

Mode	Pause
Signal	Frame 23500 (Yellow Green)
Measuring instrument	Monitor screen
Adjusting element	CT001
Specified value	Dropout section and surrounding section are of the same colors.

Preparations:

1) Paste a black tape onto the 1H interval of the outer most circumference of the LD reference disc CAV recording side (The side where the radial can be seen).
(Length: Approx. 10 mm)

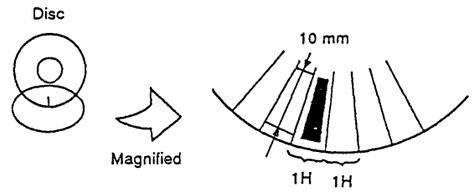


Fig. 7-11.

Adjustment method:

1) Press PAUSE (❚❚) button.
2) Search the frame 23500.
3) Adjust the color of the dropout section of CT001 to that of the surrounding section.

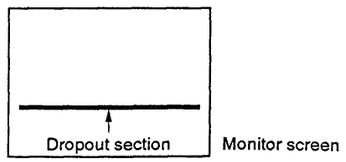


Fig. 7-12.

7-12-4. Video Output Level Adjustment (MB-712 Board)

Mode	Pause
Signal	Frame 4100 (Color bar)
Measurement point	J201 (VIDEO OUT terminal) (Terminated to 75Ω)
Measuring instrument	Oscilloscope
Adjusting element	RV001
Specified value	1.00 ± 0.03 Vp-p

Adjustment method:

1) Press PAUSE (❚❚) button.
2) Search the frame 4100 and apply a vertical bar signal.
3) Adjust RV001 for 1.00 ± 0.03 Vp-p.

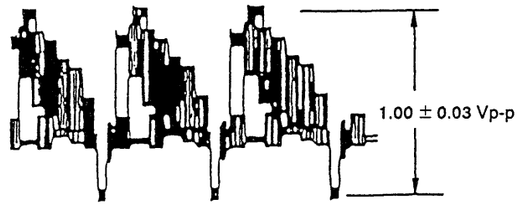
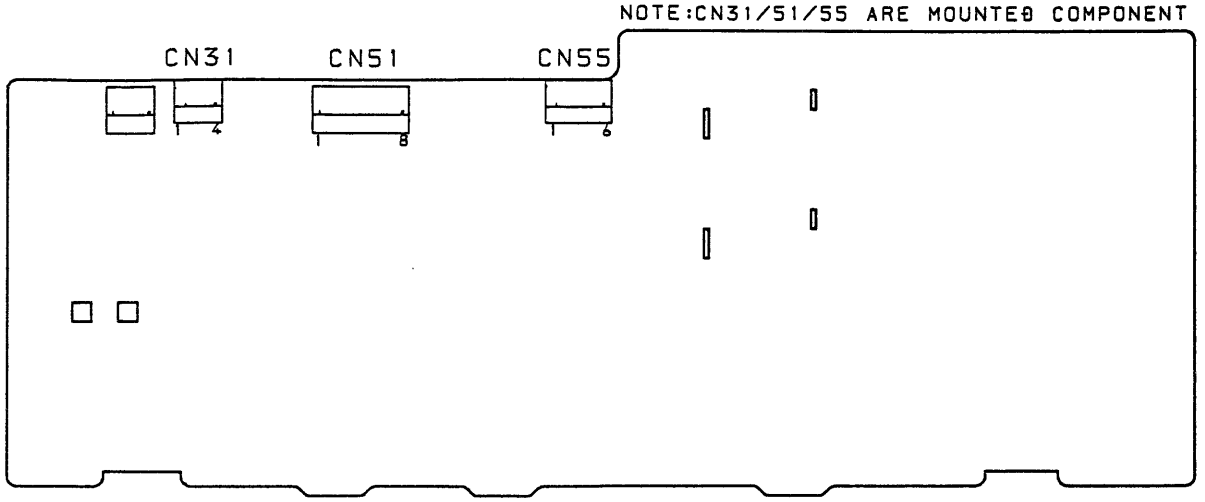


Fig. 7-13.

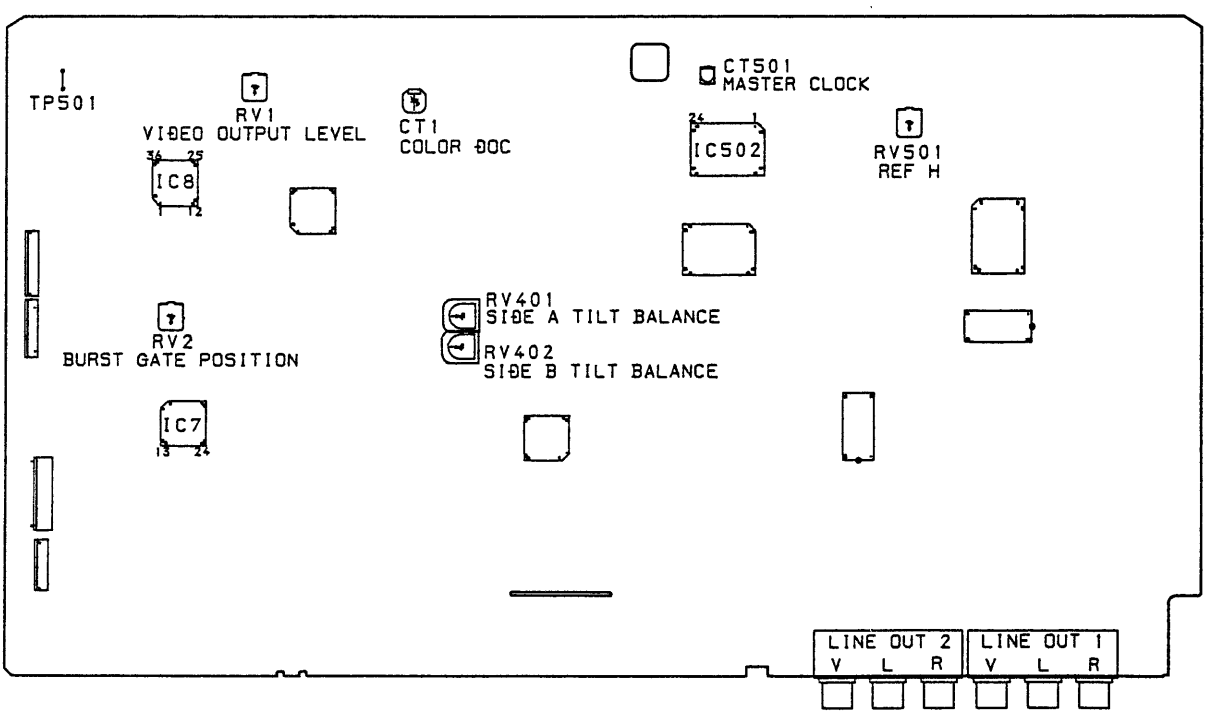
7-13. PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENT

PS-716 BOARD (CONDUCTOR SIDE)

NOTE:CN31/51/55 ARE MOUNTED COMPONENT SIDE.



MB-712 BOARD (COMPONENT SIDE)



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